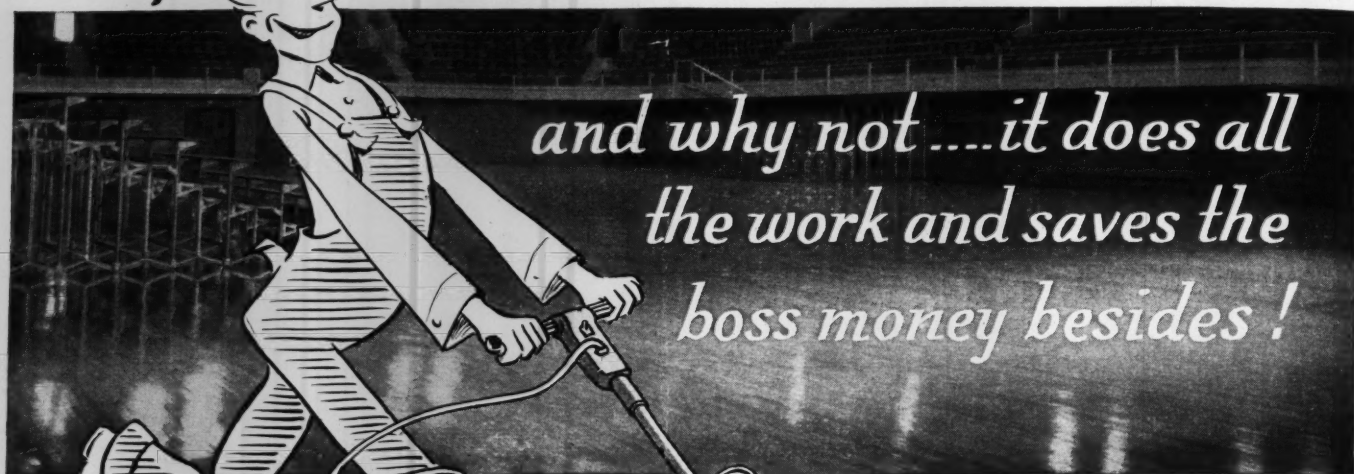




LIBRARY
1914-15
BOSTON COLLEGE

Boy.. do I like this Steeltonian !



*and why notit does all
the work and saves the
boss money besides !*

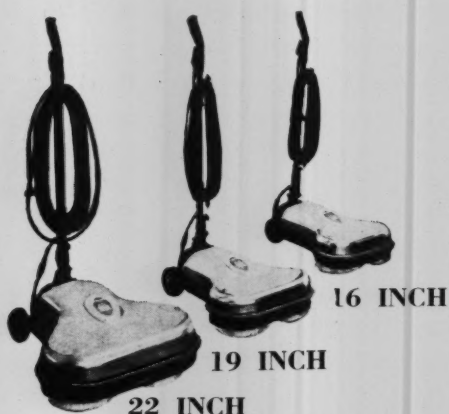
It. H.

Hillyard's
NEW
"Steeltonians"



Two Sizes
10 INCH
20 INCH

Economically recondition and maintain floors of wood, linoleum, asphalt tile and rubber tile, etc. uses standard type of steel wool in ribbon form. Employs new dry method for treating floors.



The NEW "Hiltonians"

Lead the field in utility, efficiency and economy, have brushes for every need. Combine speed, power and weight to give maximum results and long life. Write for literature.

Your Floors Can Be Kept Beautiful

Using Hillyard Floor Maintenance Machines, Treatments and Methods will protect and prolong the life of any floor. The rich coloring of the various types of floors is brought out and maintained when Hillyard Hi-Quality Products are used.



Speed, power and weight are co-ordinated to produce the utmost in service at a minimum of effort and expense in the 1940 models of the NEW "Steeltonian" Steel Wool machines and the NEW "Hiltonian" Lowboy twin-brush scrubbing and polishing machines. Write for a demonstration of these machines.



Hillyards have developed Floor Treatments through many years of research and actual working conditions and machines, materials and methods that have proven to be correct. Flooring Manufacturers, Contractors and Leading Architects APPROVE Hillyard Floor Treatments and Methods.

FREE This NEW book just published, full of interesting facts and short cuts to economical floor maintenance. Send for your copy, no obligation at all. Write today.



...DISTRIBUTORS HILLYARD CHEMICAL CO. ... ST. JOSEPH, MO. ... BRANCHES IN PRINCIPAL CITIES...



RIDDELL

THE HOUSE OF QUALITY and SERVICE



FOOTBALL SHOES



Style 89—Game shoe of Yellowback Kangaroo—soft toe—buffed sole—equipped with No. 4 cleats. Goodyear welt construction.

School Price.....\$10.75

Style Z—Same shoe in Blue Back Kangaroo. School Price.....\$8.75



Style H—Second oldest shoe in our line. A strictly university grade shoe. Upper of the finest Yellowback. Split shank, Goodyear welt construction. Comes equipped with No. 4 cleats.

School Price.....\$9.75

Style HX—Same as H only has soft toe. School Price.....\$9.75



Style R—The oldest shoe in our line. Used as an all-round shoe for practice and games by many of the country's leading teams. Light, yet very tough and comfortable. Comes equipped with No. 4 cleats. Goodyear welt construction.

School Price.....\$8.75

Style RX—Same as R only has soft toe. School Price.....\$8.75



Style P—The original quality straight sole shoe. Used by many professional and university teams for practice as well as games. Made of the finest selections of Ath-Tan leather and Oak sole leather. Equipped with No. 4 cleats. Goodyear welt construction.

School Price.....\$8.00

Style PX—Same as P only has soft toe. School Price.....\$8.00



Style 77—Upper of Athletic Tan leather which is very tough and pliable and will withstand perspiration. Goodyear welt construction, ten eyelets high. Split shank soles of good grade Oak Tan leather. Equipped with No. 4 cleats. A good game shoe.

School Price.....\$7.50

Style 77X—Same as 77 only has soft toe. School Price.....\$7.50



Style O—One of our old standbys with the larger high schools. Made of the best grade of Ath-Tan leather. Is a shoe of excellent quality. Is light, durable and a shoe we can recommend without reservation. Equipped with No. 1 cleats. Goodyear welt construction.

School Price.....\$6.50

Style OX—Same as O only has soft toe. School Price.....\$6.50



Style X—A very sturdy shoe. Made throughout of a good grade of Athletic Tan leather. Soles are of good Oak leather. By all odds, the best shoe made within this price range. Has No. 1 cleats. Goodyear welt construction, nine eyelets high.

School Price.....\$5.50

Style XX—Same as X only has soft toe. School Price.....\$5.50

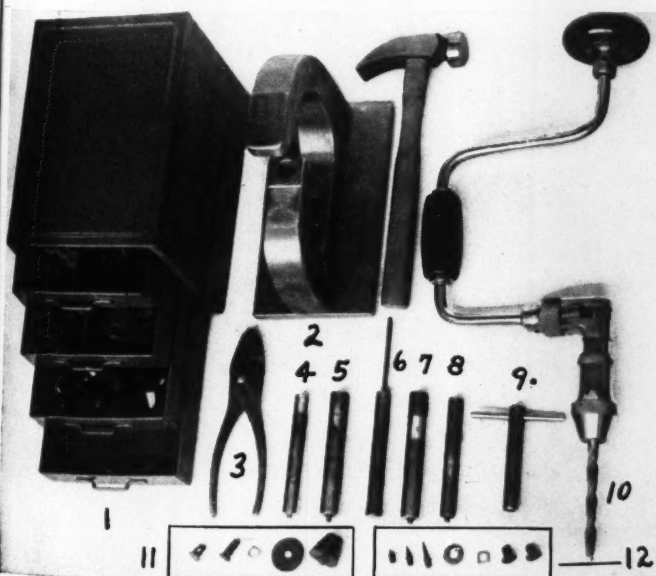
The House of Riddell has had 18 years' experience with female cleats and fixtures and 13 years' experience with the male cleat construction. Our shoes can be had in either construction. Our long experience is your safeguard and protection.

FOOTBALL SHOE ACCESSORIES

School Prices

| | |
|---|--------|
| Kicking Toes, each..... | \$1.00 |
| Cleats No. 1, Male or Female, per set of 14 in bag..... | .30 |
| Cleats No. 2, Male or Female, per set of 14 in bag..... | .30 |
| Cleats No. 4, Male, per set of 14 in bag..... | .25 |
| Cleats No. 4, Female, per set of 14 in bag..... | .20 |
| Cleats No. 5, Mud—Male, per set of 14 in bag..... | .25 |
| Cleats No. 5, Mud—Female, per set of 14 in bag..... | .20 |
| Laces, gross..... | 4.50 |
| Fixtures, complete (Male or Female Set-up)..... | .05 |
| Pliers..... | .25 |
| Cleat Wrench..... | 1.50 |
| Cork Soles, pair..... | .09 |
| Sole Plates, pair..... | .24 |
| Heel Plates, pair..... | .20 |
| Reinforcement Plates, pair..... | .10 |
| Neatsfoot Oil, quart..... | .90 |
| Repair Kit—This Repair Kit Can Be Used for Both Male and Female Cleats. | |

Hammer and Brace are not a part of tool kit. School Price for complete kit (22 items) \$10.00



John T. Riddell, Inc.
1259 N. Wood Street Chicago, Illinois



R I D D E L L



Basket Ball No. 1

Same center as Style A, covered with good grade of Gunnison leather.

Price.....\$8.00



Basket Ball No. 2

Covered with good grade of pebble grained cowhide.

Price.....\$6.00

Basket Ball No. 3

Covered with good grade of pebble grained split cowhide.

Price.....\$4.50

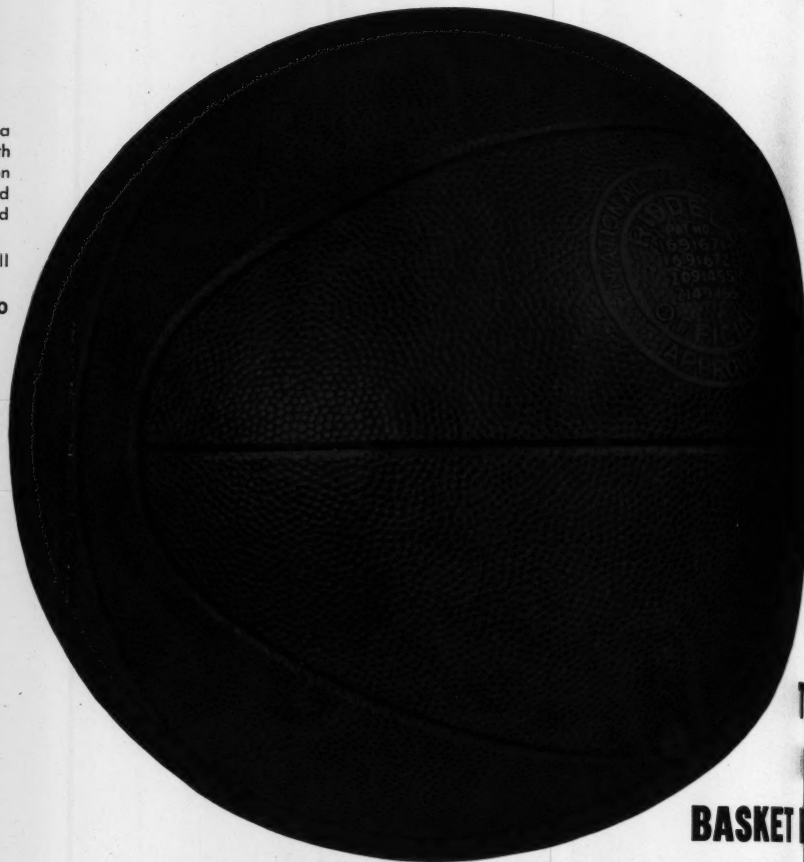
Style A

The ball that feels like a basket ball. Covered with the same grade of Gunnison leather that has been used for years in the best stitched balls.

A very tough ball that will hold its size and shape.

Price.....\$10.00

**Our Style "A"
Basket Ball
Is National
Federation
Approved.**



**THE BALL THAT KEEPS THE FEEL AND REACT OF THE
THE BALL THAT RETAINS THE RATIO OF BLADNING A
THE BALL THAT WILL NOT THROW A PLAYFF HIS
THE BALL THAT WILL NOT MAKE THE COAHANGE**

BASKET BALL SHOE ACCESSORIES

Laces, gross.....
Outsoles (Light-colored, non-marking), per pair.....
Resoling with Light-colored, non-marking soles, per pair.....
Sponge Rubber Insoles, per pair.....
Cork Insoles, per pair.....

**ALL SHOES MAY BE HAD IN
THE FOLLOWING ADDITIONAL COLOR
BLUE — ORANGE — GREEN**



Style 56

The Champion of leather top basket ball shoes. Is genuine Goodyear welt construction with non-marking sole that can be resoled. We believe this is the fastest starting and stopping shoe on the market. It features a shock absorbing quality that will save your players from fatigue in the hard grind of a basket ball season.

Price.....\$4.90



Style 55—Red

A light basket ball shoe in colors for game use. Made up special, requires 3 weeks.

Price.....\$5.75



Style 57

Same as 56 only in white elk.

Price.....\$5.75



Style 55—Brown

A light basket ball shoe in colors for game use. Made up special, requires 3 weeks.

Price.....\$5.75



Style 55—Yellow

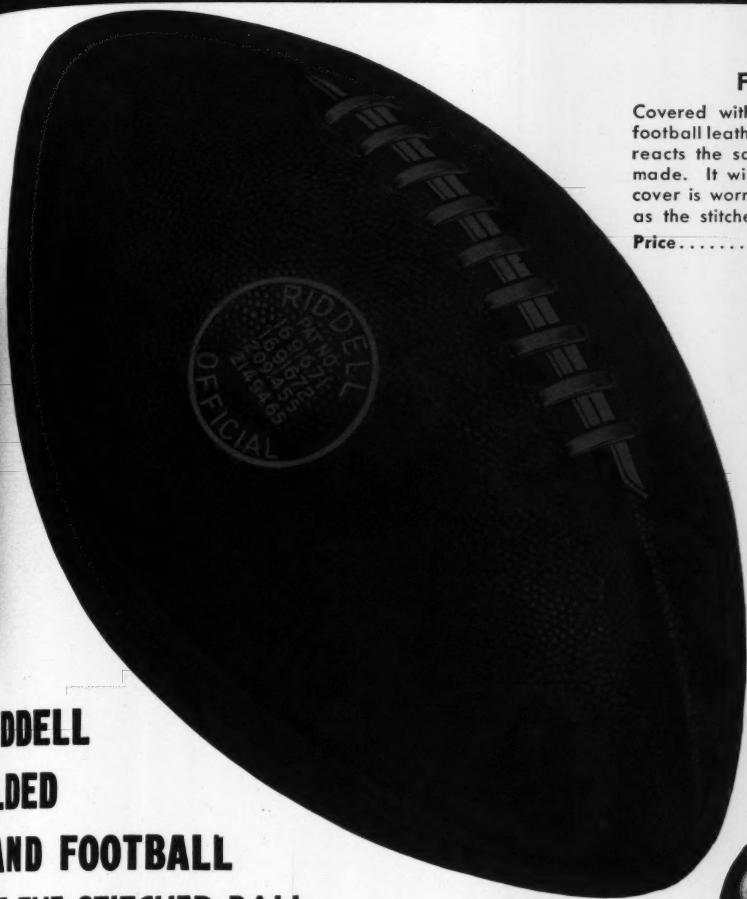
A light basket ball shoe in colors for game use. Made up special, requires 3 weeks.

Price.....\$5.75

Bowling Shoes kid. Take to make up. Price.....

THIS IS YOUR D E L L

RIDDELL



Football No. 1

Covered with Gunnison's special university football leather. This ball at 7 lbs. pressure reacts the same as the best stitched balls made. It will hold its size and shape until cover is worn off. Does not get as soggy as the stitched ball when wet.

Price.....\$7.50



Football No. 2

Same as No. 1 only covered with Gunnison basket ball leather.

Price.....\$6.50

Football No. 3

An outseam ball for intramural and six man.

Price.....\$4.50



A very fine moulded volley ball that will hold its size and shape.

No. 1 covered with best grade of white elk leather.

Price.....\$5.00

Covered with good grade white leather.

Price.....\$3.85



Bowling Shoes Style 66

Style 66—The last word in an athletic bowling oxford. Shoes are of equal weight. Has starting insert on right foot which will not tear off. A very stylish looking shoe. Has white eyelets. Men's sizes 6 to 12. Women's sizes 2 to 9. B, C, D, and E widths.

Price.....\$4.50

Style 69—Same as Style 66 only with high top. Has black eyelets. Carried in C, D, E widths.

Price.....\$4.50



Boxing Style 67

A genuine Goodyear welt boxing shoe. Upper of heavy kid. Sole of soft Moccasin leather.

Price.....\$3.75



Wrestling Style 70

Same as 67 except sole is tough rubber. Has non-scutt tip.

Price.....\$3.75



Brown Bowling

Bowling shoes in colored kid. Takes 3 weeks to make up.

Price.....\$6.00



Yellow Bowling

Bowling Shoes in colored kid. Takes 3 weeks to make up.

Price.....\$6.00

RIDDELL
MOULDED

AND FOOTBALL

OF THE STITCHED BALL
ADLINING AND LEATHER OF THE STITCHED BALL
OFF HIS GAME

CHANGE HIS STYLE OF PLAY

BASKET BALL AND FOOTBALL ACCESSORIES

| | School Price |
|---|-----------------|
| Basket Ball Score Books (Adams), each | \$0.35 |
| Repair Cement (Riddell), tube..... | .25 |
| Ball Cleaner (Riddell), can..... | .35 |
| Ball Wax (Riddell), cake..... | .25 |
| Basket Ball Bladders (Seamless Rubber Moulded), each..... | 1.00 |
| Football Lace, each | .15 |
| Football Rule Book (National Federation)..... | .25 |

Bowling

kid. Takes 3 weeks
.....\$6.00

RIDDELL CATALOG



RIDDELL

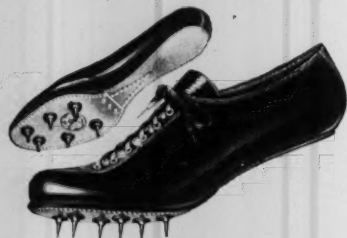
THE HOUSE OF QUALITY and SERVICE



TRACK AND FIELD SHOES



Style S—Our finest model University shoe. A light, but very durable, glove-fitting yellowback Kangaroo sprint shoe. Hand-turned construction...\$6.50



Style N—A hand turned shoe made of very fine grade of Athletic Tan leather. Fits like a glove.....\$5.00



Style NX—A track shoe long needed to meet the demand for a more durable practice shoe. It is of genuine Goodyear welt construction. Has full sole which keeps upper from wearing out at heel. We believe this is the toughest track shoe made.....\$4.20



Style T—A good durable track shoe. Upper made of tough Athletic Tan leather that insures fit, comfort and resists perspiration.....\$3.75



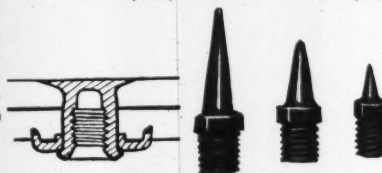
Style J—Field or jumping shoe of grade corresponding to Style S. As counter and two spikes in heel. Our very best yellowback field shoe.....\$7.00



Style K—A very strong shoe of welt construction. Highest grade oak soles. Made of Athletic Tan leather. Two spikes in heel.....\$5.50



Style KX—Same shoe as Style K except it has usside heel with no spikes in heel.....\$5.50



Riddell Track Shoes feature an interchangeable spike in three lengths: price, each.....\$0.05

$\frac{1}{4}$ " for board tracks
 $\frac{3}{8}$ " for indoor dirt tracks
 $\frac{5}{8}$ " for outdoor tracks

The soles of the shoes are reinforced with a steel plate. The fixture binds the sole together in such a way that the spikes cannot punch up into the foot.

Not Carried in Stock)

| | |
|--|---------|
| P—Pole Vaulting Shoe like K only high top, one spike in heel..... | \$ 7.00 |
| 2—Pole Vaulting Shoe like J only high top, one spike in heel..... | 9.25 |
| 3—Cross Country same as J only has usside heel with no spikes..... | 6.50 |
| 4—Indoor Shoe with no spikes in tap or heel, usside soles..... | 7.50 |
| Y—Indoor Shoe with no spikes in tap or heel, usside soles..... | 6.50 |

SPECIAL TRACK SHOES

(Two Weeks to Make Up)

TRACK ACCESSORIES

Track Wrenches.....\$ 0.35
Repair Kits complete for football and track shoes..... 10.00

Laces for Track Shoes, per gross laces.....\$ 1.50
Fixtures complete..... .07

BASEBALL AND SOFTBALL SHOES



Style SB—Our very best feather-eight baseball shoe built especially for the big league player. Made of Yellowback Kangaroo. Extra strong and extra light.....\$8.50



Style NB—A very fine Goodyear welt construction baseball shoe with split shank sole. Made of Ath-Tan Kangaroo. Used by many professionals....\$5.50

Style NBS—Same as NB only has short $\frac{3}{8}$ " softball spikes.....\$5.50



Style KB—Goodyear welt construction with straight sole. An extremely strong shoe. Upper made of the finest Athletic Tan leather. Used by quite a few Big League catchers and pitchers. Best shoe in our line for this purpose.....\$3.95

Style KBS—Same as KB only has short $\frac{3}{8}$ " softball spikes.....\$3.95



Style 33—Has a regular baseball upper made out of Athletic Tan leather. Leather insole and counter. Features a special moulded rubber outsole with cleats moulded on the sole which are especially adapted for softball. Each sole has two extra removable golf spikes which can be used at the discretion of the player and can be easily removed if not desired. This shoe makes an excellent golf shoe; also, can be used as a football official's shoe.....\$3.75

BASEBALL ACCESSORIES

| | |
|--|--------|
| Laces, gross..... | \$1.65 |
| Spikes (sole or heel), pair..... | .18 |
| Pitchers' Toe Plates, attached to shoe, leather, each..... | 1.50 |
| Pitchers' Toe Plates, attached to shoe, full cap aluminum, each..... | 1.00 |
| Pitchers' Toe Plates, loose, leather, each..... | .38 |
| Pitchers' Toe Plates, loose, full cap aluminum, each..... | .60 |

1259 N. Wood Street

John T. Riddell, Inc.

Chicago, Illinois

TOPS

... FOR NOURISHMENT ATHLETES NEED

Start Your Boys on This Nourishing Breakfast So Many Great Champions Eat. It's a Winner for Flavor and Food Value!

You know two very important reasons why the young athletes in your charge need a good, nourishing breakfast every morning.

It helps them keep in top condition for active competition right now. And it helps build sound, sturdy bodies that growing boys should have in years to come.

Here's a national champion breakfast designed to handle both jobs the way you want them done—this "Breakfast of Champions," a generous bowlful of crunchy, toasted Wheaties flakes with plenty of milk or cream and fruit.

For winning flavor and keen satisfaction this famous breakfast is the choice of probably more great athletes than any other dish of its kind! And for solid nourishment your boys need every day, it's a champion that belongs in the morning line-up!

Here's a Well-Rounded "Team" of Nourishing Foods!

You see, this "Breakfast of Champions" is a combination of *three basic foods* athletes can use in good amounts daily—toasted whole wheat, milk and fruit. Each is a recognized champion for food value. Together, they make a complete breakfast that's nourishing and satisfying.

Your bowlful of Wheaties gives you abundant food-energy—the "food-fuel" that's the largest single need

in an athlete's diet. Those toasted whole wheat flakes also supply good body-building proteins, iron and phosphorus.

The milk you pour on your Wheaties provides excellent proteins for building firm muscle tissue, plus calcium and phosphorus needed for sound bones and teeth.

Fruit gives you other valuable minerals. And your complete "Breakfast of Champions" delivers Vitamin A, essential to normal growth, the appetite and growth promoting Vitamin B, and Vitamin C, to help maintain good condition.

Tops For Flavor, Too!

You know the excellent nourishing qualities of toasted whole wheat, but that refreshing Wheaties flavor may come as a distinct and pleasant surprise.

Here is whole wheat in a form that clicks with hearty appetites! Big, toasted flakes with a zippy, malted taste that makes Wheaties a number one favorite of millions!

We're sure that your boys will go for that grand Wheaties flavor. And they'll get real benefit from a nourishing "Breakfast of Champions" every morning.

Why not start them—and yourself—on Wheaties tomorrow! Wheaties are a product of General Mills, Inc.

Wheaties and advertising claims for them are accepted by the Council on Foods of the American Medical Assn.

WHEATIES

WITH MILK OR CREAM AND SOME FRUIT

"Breakfast of Champions"

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TEAMWORK

that begins in the Locker Room



Good lockers build school pride and help team morale. And you can't buy better lockers than Art Metal.

Built on the unit principle, single walls and backs are used; when arranged in groups or double rows. One wall partition between two lockers side by side, or a single back for double row lockers.

Louvers are turned inward for better ventilation and the V grooves stiffen door as well as giving locker a modern appearance.

Art Metal lockers have the pre locking features. The locker cannot be left unlocked when door is closed. Write for catalog—Art Metal Construction Co., Jamestown, N. Y.

Art Metal

STEEL LOCKERS

SCHOLASTIC COACH

Reg. U. S. Pat. Off.

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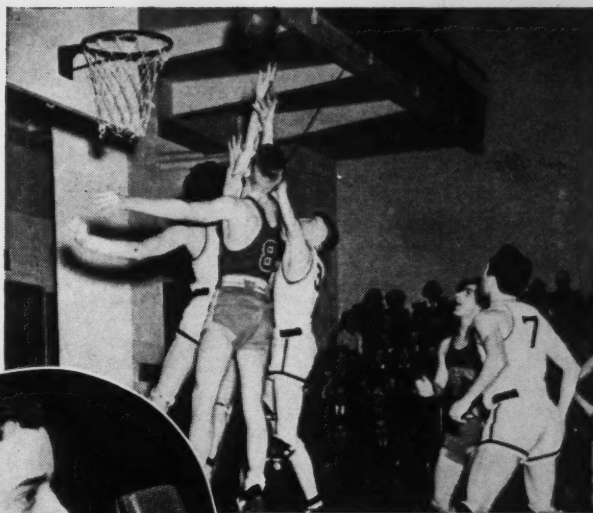
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RCA Manufacturing Co., Inc., Camden, N. J.
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() Outdoor Sound Equipment.

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School _____

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GOAL-HI



America's New Play-Game

As Originally
Developed by

Dr. FORREST C. "Phog" ALLEN
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University of Kansas, Lawrence, Kan.

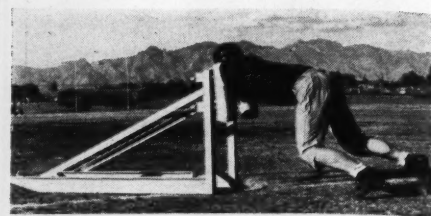


What the school field has been seeking . . . Goal-Hi offers all the exercise value of regular basketball, yet remains an informal game rather than a high-speed sport . . . A year-'round game, played by boys and girls of all ages, indoors and out-of-doors (use the same single piece of equipment in all locations) . . . Goal-Hi may be played by entire gym classes or playground groups . . . Official Rules Book by Dr. Allen . . . Goal-Hi equipment is priced within the reach of every school budget.

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Authorized Sales Representative in Your Locality

NEW EQUIPMENT

Charging Sled



Marty Gilman, football field equipment impressario, has a new item in stock which has a good chance of revolutionizing the industry. The Casteel Charging Sled trains players to hit with the front part of the shoulders, with the arms wide and close to the body, the feet spread and the head up. Invented by Miles W. Casteel, University of Arizona coach, it weighs 200 pounds and provides sufficient resistance so that the players will not slip to the ground. The design of the sled prevents it from swirling around upon being hit and moved. For defensive practice, the spring buffers offer a good target for the use of the hands. In addition to the Casteel Sled, Gilman these days is featuring Fightback, three suits of "armor" for use in blocking practice.

Coil-Spring Stopwatch



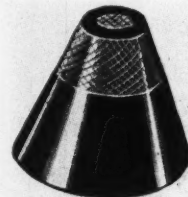
M. Ducommun Co.'s new Coil-Spring Mechanism Stopwatch represents the finest in athletic timers. The use of non-breakable, rust- and corrosion-proof coil-springs eliminates friction and wear and guarantees continual accuracy and longevity. In addition, these time recorders incorporate an independent hammer spring and brake system; the former assures life-time fly-back to zero, and the latter eliminates any variation at the zero setting when the watch is started or stopped.

Basketball Backstops

The American Playground Device Co. have ramified their line of high-grade Playground and Swimming Pool equipment with a complete line of Basketball Backstops. They now have an assortment of more than 20 different backstops adapted to every conceivable type of situation. The line may be classified under these six main groupings: wall, wall-braced, suspended wall-braced, suspended wall-braced swing-up, suspended swing-up, and portable. Either the select ply-wood or the special all-metal banking boards are available in all cases.

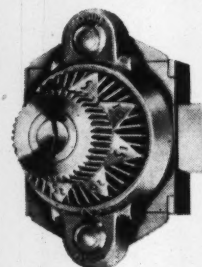
Safety Cleat

Every football coach desiring a really safe cleat, one that conforms to the latest specifications, will be interested in the new Cord-Tip Safety Cleat developed by the Brady Research Bureau and introduced by the Brooks Shoe Mfg. Co. Perfected after much research and experimentation, the new cleat provides longer wear, greater convenience and practically eliminates danger of cleat laceration. Another exclusive Brooks advancement—the Lock-Tite Cleat Washer—is guaranteed to prevent the cleats from coming loose during play.



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POSTPONE FATIGUE!**

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But remember—Knox is the *only* gelatine with hundreds of tests and laboratory experiments to *prove* its

stamina-building power. In group tests among average men and women doing all types of work, Knox has been *proved* to cut down tiredness for 9 out of 10 completing the 28-day Knox routine.

Do not confuse Knox Gelatine with inferior, *unproved* gelatines, or with ready-flavored gelatine desserts which are only about 10% gelatine and about 85% sugar. When making up your budget for Fall athletic training materials, be sure to include Knox Gelatine—and *only* Knox!

HOW TO DRINK KNOX GELATINE (Formula Advised by Famous Coaches)

1. Pour 6 ounces of cold water in an 8-ounce glass.
2. Pour onto the water 3 envelopes (or three level tablespoonfuls) of Knox Gelatine.
3. Let liquid absorb the gelatine. Then stir briskly and drink quickly. If it thickens, stir again.
4. Do this twice a day—before meals—for seven days. Then reduce to 4 envelopes (or 4 tablespoonfuls) a day—two envelopes each feeding. If there is a drop in weight, increase to original envelopes.

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ANOTHER chapter in the history of man's efforts to conquer the air, the sea and the land was written into the books the other day when a long-legged high school teacher from Tuolumne, California, hoisted himself over a bar 15 feet off the ground. Thus one of those "can-it-be-done" disputations became a reality.

For years, the clan of the spiked shoe has been debating the ultimate possibility of man in the various events. Would anyone ever high jump eight feet? put the shot 60 feet? run a mile in four minutes? wash his socks in 47s. flat? etc., etc. The 15-foot vault was also one of those things, until Cornelius Warmerdam stuck his bamboo pole into the pie.

Now that the 15-foot vaulter has arrived, the question is, "Where do we go from here?" Until man sprouts wings, there *must* be a limit to the heights he can soar. All sorts of scholarly testimony has been advanced to prove this. But all we know is that ever since we've been chronicling track records they've been falling faster than the rules committee can okay 'em.

Being incapable of understanding even the simplest forms of kinesiology and related subjects, we naturally make no pretense of knowing where and when our bamboo-pole artists will stop. But there is a man who knows all about such things. He can tell you, without blushing, exactly how high into the stratosphere man can, or will, ascend. We refer to the well-known coach, Brutus Hamilton.

Mr. Hamilton has devoted a large part of his otherwise normal life to exploring the ultimate possibilities in track. When he isn't imparting nuggets of wisdom to his University of California cinder pounders, he staggers around under a pile of graphs, charts and slide rules. At the slightest provocation, he will buttonhole you and show you just where the record-breaking business will end. He's got it all figured out.

In the pole vault, for example, his ultimate is 15 feet, 1 and 8/100 inches. When that height is reached, he says, the boys might just as well throw away their poles. The absolute limit will have been reached. He arrived at this figure by following a trail of calculus, based on a decathlon chart.

Here Below

So far, Mr. Hamilton's ultimate has held up well enough. But we have a hunch that Papa Golden Bear is going to wake up one of these mornings and find his ultimate

terra sawdust. Had Mr. Hamilton been around to see him do it, he probably would have taken another look at his calculus.

Incidentally, pole vaulting ultimates are not the only ultimates he specializes in. He has one for every occasion. Three of them have already come to unhappy ends. He regarded the 46.2s. that Bill Carr once turned in for 400 meters as the record supreme. But Archie Wil-

liams, one of his own boys, no less, came along and chipped a tenth of a second off that mark.

His ultimate for the 110-meter hurdles was shattered by Spec Townes, and last season the German star, Harbig, ran 800 meters one and one-tenth seconds faster than Mr. Hamilton ever said it could be run.

Now, Brutus is an honorable man with a distinguished coaching record and an imposing list of figures, but he can only be indulging in a superior kind of guesswork. No one can safely say that the ultimate of man today will apply to the man of tomorrow. With better coaching, superior equipment and keener competition, the athletic breed is bound to improve.

WE UNDERSTAND that the A.A.U. people are growing alarmed over the pole vaulting situation. With the ceiling going higher and higher, they shudder to think of the future. In the old days, they were concerned 100 percent with the way the boys got up there. Today the thing is just the other way around. The problem of how the vaulter is to get down all in one piece is becoming graver and graver.

If you've ever been up 15 feet, on the end of a pole or otherwise, you know that the ground looks far, far away and the last thing you feel like doing is jumping down. Even if some kindly official came along with a mattress, the pit would still look more like a grave than a landing field.

It occurs to us that some sort of gadget might be devised that will help bring the vaulter down to earth comfortably and safely. An elevator or a parachute would do the trick very nicely. But this, we fear, is a thing for the distant future. Until that time, our friend Sandringham will have to develop a more delayed throwaway.



Courtesy New Yorker

"Sandringham is certainly in fine form today"

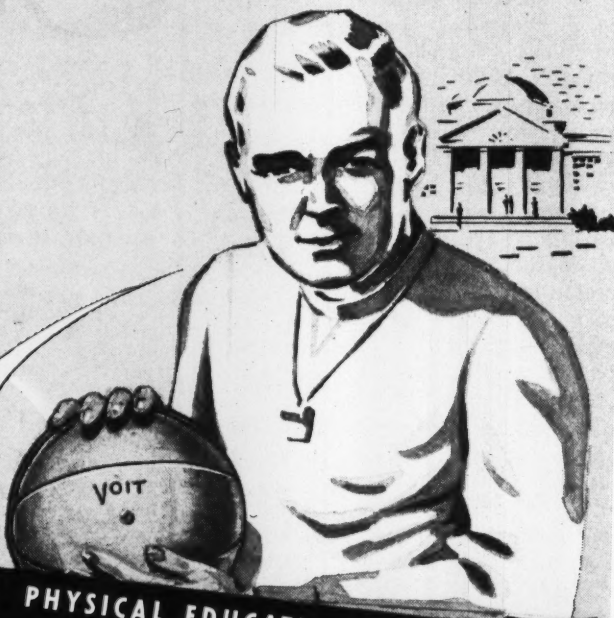
gone on the wings of a bamboo pole. As a matter of fact, vaulters have already crossed the horizon set by Mr. Hamilton. Dean Cromwell's man, Ken Dills, has actually cleared 15-6 at least six times, but has nudged the bar on the way down to



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ELEMENTARY INSTRUCTOR

A YEAR-ROUND INTRAMURAL PROGRAM

By Charles Law

Charles Law, assistant director of physical education at the Melrose, Mass., High School, submits an all-year-round intramural sports program.

THE word "intramural" means within the walls, and refers to competition between groups of the same school. It is the aim of this program to promote organic vigor, to teach skills and sports that will contribute to education in the worthy use of leisure time and to assist the individual in making his adjustments as a member of the social group.

The objectives* of this program seem to be:

1. To provide an opportunity for each student to participate in supervised competitive sport activities.
2. To provide a field of competition in which students of average, or less than average, ability may participate.
3. To provide wholesome physical activity to take up part of the student's leisure time.
4. To promote social contacts and group relationships which are of vital interest to the student.
5. To develop a permanent interest in sports which may have a carry-over value.
6. To develop skills that will in a way guarantee continued participation.

In organizing a school for intramural sports the first important factor to consider is the available facilities. Without adequate space and equipment, it is impossible to develop a well-rounded sports program. But no matter how limited the facilities may be, some kind of a program can be whipped up to serve the purpose. A few sports well promoted and conducted are all that is needed.

At Melrose the setup is almost perfect. We have a large gymnasium that can be divided into two separate sections, one for boys and the other for girls; a large athletic field that makes it easy for us to conduct outside activities; and, across the street, six tennis courts and a large pond. In the winter the pond freezes over and is converted into several excellent rinks for hockey and skating. With this athletic plant at our disposal, we do not have to stint in our choice of activities.

The next factor to consider is the element of time. As a rule, the most

convenient time for intramurals is in the afternoon or early evening when school is out. But the most convenient time is not always the time that can be used. If the school sponsors a good number of varsity teams, for example, the varsities are naturally entitled to first call on the facilities, a privilege that plays hob with the plans of the intramural director. Ways must then be devised of getting around the problem.

At Melrose we conduct the greater part of our program during school hours. We use our physical education classes for the purpose, and also a general "study" period which is

| MELROSE HIGH SCHOOL | | | | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|-----|---|------|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|
| NAME JOHN SMITH | | | | | | | | | | | | | | | | | | | |
| Grade | | | III | | | | | | | | | | | | | | | | |
| Age | 15 | y | 9 | m | | | | | | | | | | | | | | | |
| Weight | 143 | | | | | | | | | | | | | | | | | | |
| Height | 68 | | | | | | | | | | | | | | | | | | |
| ($\frac{W}{2} + H - 60$) Multiplier | | | 22 | | | | | | | | | | | | | | | | |
| Pullups | 7 | | | | | | | | | | | | | | | | | | |
| Pushups | 9 | | 16 | | | | | | | | | | | | | | | | |
| Arm Strength | | | 3 | 52 | | | | | | | | | | | | | | | |
| Lift-Legs | 14 | | 80 | | | | | | | | | | | | | | | | |
| Lift-Back | 4 | | 90 | | | | | | | | | | | | | | | | |
| Grip-Left | 1 | | 05 | | | | | | | | | | | | | | | | |
| Grip-Right | 1 | | 14 | | | | | | | | | | | | | | | | |
| Lung capacity | 2 | | 16 | | | | | | | | | | | | | | | | |
| STRENGTH INDEX | | | 2757 | | | | | | | | | | | | | | | | |
| Normal S. I. | | | 2232 | | | | | | | | | | | | | | | | |
| PHYSICAL FITNESS INDEX | | | 123 | | | | | | | | | | | | | | | | |
| Classification | | | | | | | | | | | | | | | | | | | |

PHYSICAL FITNESS INDEX tests are used as a basis in organizing intramural teams. As shown above, it consists of a battery of eight different strength tests.

held each day for extra-curricular activities. It should be remembered that the time and place the program is administered is not as important as the program itself. As long as it caters to boys who otherwise would not get the opportunity to play, it is discharging all the functions of an intramural program.

The next and most important factor is the program itself. In the fall season, sports interest is naturally focused on football. Unfortunately, however, it is impossible to work this sport into the schedule of events. Since it takes a small fortune to equip every boy with the necessary regalia, we turn to the nearest and next best thing, which is tag, or touch, football.

Every year we organize 72 teams in our physical education classes, each team consisting of seven to ten boys. The teams are divided into leagues (to be explained later) and play a ten-game schedule. At the close of the season, the winners meet in a special elimination tournament to determine the school champion.

A special set of rules and regulations enhances the popularity of these games. With the exception of the play-off tournament, all decisions are left to the jurisdiction of the team captains. Strange as it may seem, we have had very few squabbles over "bum" decisions in the past four years. In the championship series, however, we assign officials to the games.

Several times a season the complete standings of the teams are posted to let the boys know just how their teams are faring in their respective leagues. We have found that the methods by which you handle such details as the keeping of the records and the posting of scores play an important role in stimulating interest. In time the outcome of a tag football game comes to mean just as much to a boy as the outcome of his school's big game on Saturday.

Organizing teams

There are several good methods of selecting and organizing teams. The one we use was devised by Leonard W. Clark, director of physical education at Melrose. Once a year every boy is compelled to take the PFI strength test. He is then assigned to a division consisting of boys of the same ability. Insofar as strength is concerned, we can thus arrange the teams so that they are potentially as strong as one another.

The PFI (Physical Fitness Index) consists of a battery of tests in which every item is marked individually. The total number of points the boy makes is recognized as his strength index. This figure, when divided by the normal strength index—the standard for boys of his age, weight and height—gives the boy his Physical Fitness Index.

The hypothetical case of John Smith in the accompanying chart shows how the test is administered. Pullups and pushups are simple enough to test, the horizontal bar and the ends of the parallel bars,

respectively, being used for the purpose. The arm strength index is obtained by adding the total pullups and pushups and then multiplying this figure by the multiplier, which is obtained by the formula in the parenthesis.

The back and leg lifts are obtained by the use of a dynamometer, hand grips with a manometer, and lung capacity with a spirometer.

The strength index, which we are primarily interested in as far as equalization and classification of individuals for intramural sports are concerned, is arrived at by adding the results of all the tests. In this particular instance, the boy's index would classify him in a group of fairly strong boys, whose indexes would range from 2700 to 3000 points.

Choosing up sides

We have kept statistics on the results of our games and, with few exceptions, the teams have proven very equal in ability. Occasionally a small boy with exceptional ability will come along and necessitate an adjustment in the make-up of a team. But these cases are few and far between, and do not give us much trouble.

Another plan quite generally used is to call all the eligible boys together, and let them, by popular acclaim, select the four, six, eight or ten most desirable leaders. The leaders may then stand in different parts of the gym and immediately choose their teams from those present.

While this is a popular method of forming intramural teams, we believe it is inferior to our own. By using the PFI tests as a basis, and selecting the teams ourselves, we eliminate the mental torture many boys of inferior skill suffer, when the selection of teams is left to the boys themselves. Adolescent boys are a sensitive lot and the "dub" who is picked last often suffers from the embarrassment. This cannot happen when the responsibility for the arrangement of the teams is assumed by the administrator. The possibility of cliques monopolizing a team is also remote under this plan.

After the teams have been chosen, usually six to a class, they are given the name of a college or university and from then on are referred to as such. There are twelve leagues consisting of six teams each. Each team meets the others in its league twice during the season. At the end of the season, the winners are pitted against each other in a special elim-

ination tournament of the type previously mentioned. In keeping the standing of the teams, two points are awarded for a victory and one for a tie.

Although we conduct this program during our regular class period, it can easily be carried out after school. If a field is not available near the school, the boys will probably be willing to meet in some vacant lot, provided, of course, they have been infused with the proper interest and enthusiasm.

Another good activity for fall is a cross-country meet among teams representing their particular class or their gym class. For an activity of this type, it is advisable to build the boys up gradually, either by having them jog a couple of laps on the track during their class period or after school. Although an intramural activity may seem insignificant in the eyes of the participant himself, his condition to participate is a vital concern of the man conducting the activity.

In the late fall and winter, a time of the year when most programs are forced indoors, the interest naturally shifts to basketball. Our intramural basketball program is organized into four leagues, one for each of the four school classes. Seniors compete against seniors, juniors against seniors, and so on down the line.

Each year we have twelve freshman teams, ten junior teams, ten sophomore teams, and eight senior teams. The various teams are made up of boys who are in the same home room, a plan that enables them to keep in close touch with one another at all times.

Basketball, short but sweet

Since we do not play basketball in our physical education classes, our biggest problem is the allotment of time. Most of our games are thus played during the general study period. It is quite apparent that with forty-odd teams, the schedule must necessarily be curtailed, each team playing only four or five times a season. However, we feel that the boys get more out of a few good long games than they would out of a greater number of the abbreviated type you find in most intramural setups.

Aside from basketball, there are other activities that can be put into the program, such as volleyball, bowling, swimming, hockey, etc. Even if participation is offered in a limited form, some activity is better than none at all. Almost every boy likes to partake in these activi-

ties, and the director should find the means to incorporate as many of them as possible into the program.

In bowling, for example, there are few schools with alleys, and yet there are many boys who enjoy the game or who would like to learn how to play it. The same thing holds true for such activities as fishing, archery, golf, tennis, badminton, and shuffleboard. If the school hasn't the equipment for these sports, the director may find the facilities elsewhere in the vicinity. It doesn't require too much time or effort to organize these activities. Simply organize the teams, draw up the schedules, elect captains and let them carry on.

In the spring

In the spring we conduct a softball program very similar to the tag football tourney. We have 72 teams arranged and organized in the same manner, playing their regular league schedules and a final elimination series for the school championship.

If time and space is available, preferably after school hours, regular baseball may be offered to the boys. The classes may be organized into leagues with the winning team being awarded a crack at the varsity at the end of the season. This type of incentive helps to stimulate and maintain interest.

The best of the spring intramural activities is probably track and field. Not only does it have sports "it" in large doses, but it accommodates more participants than any other major sport.

At Melrose we have a unique way of conducting intramural track. The student body is divided into six different groups on the basis of their PFI strength test. All through the year, as part of our physical education program, every boy must participate in a series of twenty different events which are held from time to time. Since the boys compete against opponents of their own strength, the smaller boy has just as much chance of winning a decathlon championship as the taller and stronger boy.

A careful checkup is kept on every boy so that at the end of the year each boy has obtained a score of some kind for all the events he has participated in. His ten best scores are then computed to give him his decathlon score. Since our boys are divided into six divisions, we have six champions every year, each of whom receives a medal.

(Concluded on page 56)

DECATHLON SCORING TABLE

BY
LEONARD W. CLARK
DIRECTOR PHYSICAL EDUCATION
HELROSE HIGH SCHOOL

| EVENTS | POINTS | 1 | 2 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 50 | 55 | 60 | 65 | 70 | 73 | 76 | 79 | 82 | 85 | 88 | 91 | 94 | 96 | 97 | 98 | 99 | 100 |
|-----------------------|---------|------|-------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|------|------|------|------|-------|-------|------|
| 1 100 YARDS | SECONDS | 17.4 | 17.2 | 17 | 16.3 | 16.2 | 16.1 | 16 | 15.4 | 15.3 | 15.2 | 15.1 | 15 | 14.4 | 14.3 | 14.2 | 14.1 | 14 | 13.4 | 13.3 | 13.2 | 13.1 | 13 | 12.4 | 12.3 | 12.2 | 12.1 | 12 | 11.4 | 11.3 | 11.2 | 11.1 | 11 | 10.4 | 10.3 | 10.2 |
| 2 50 YARDS | SECONDS | 10.4 | 10.2 | 10.1 | 10 | 9.4 | 9.3 | 9.2 | 9.1 | 9 | 8.4 | 8.3 | 8.2 | 8.1 | 8 | 7.4 | 7.3 | 7.2 | 7.1 | | 7 | | 6.4 | 6.3 | 6.2 | 6.1 | 6 | | | | | | | | | 5.4 |
| 3 HIGH JUMP | INCHES | 32 | | 33 | | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | | | 61 | 62 |
| 4 R BROAD-JUMP | FT.-IN. | 103 | 106 | 109 | 11 | 113 | 116 | 119 | 12 | 123 | 126 | 129 | 13 | 133 | 136 | 139 | 14 | 143 | 146 | 149 | 15 | 153 | 156 | 159 | 16 | 163 | 166 | 169 | 17 | 173 | 176 | 179 | 18 | 183 | 186 | 189 |
| 5 SHOT-PUT | FEET | 11 | | | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 29 | 31 | 33 | 35 | 37 | 39 | 40 | 41 | 42 |
| 6 HALF-MILE | MIN-SEC | 3.0 | 2.59 | 2.58 | 2.56 | 2.54 | 2.50 | 2.47 | 2.45 | 2.43 | 2.41 | 2.40 | 2.39 | 2.38 | 2.37 | 2.36 | 2.35 | 2.34 | 2.33 | 2.32 | 2.31 | 2.30 | 2.29 | 2.28 | 2.27 | 2.26 | 2.25 | 2.23 | 2.21 | 2.19 | 2.17 | 2.15 | 2.13 | 2.11 | 2.10 | 2.09 |
| 7 HOP-STEP-JUMP | FT-IN | 17.9 | 17.10 | 17.11 | 18.2 | 18.5 | 18.8 | 18.11 | 19.2 | 19.4 | 19.7 | 19.10 | 20.1 | 20.4 | 20.7 | 20.10 | 21.1 | 21.4 | 21.9 | 22.2 | 22.7 | 23 | 23.5 | 23.8 | 23.11 | 24.2 | 24.5 | 24.8 | 24.11 | 25.2 | 25.5 | 25.7 | 25.8 | 25.10 | 25.11 | 26 |
| 8 STERROAD-JUMP | FT-IN. | 6.6 | | 6.7 | | 6.8 | 6.9 | 6.10 | 6.11 | 7 | 7.1 | | 7.2 | 7.3 | 7.4 | | 7.5 | 7.6 | 7.7 | 7.8 | 7.9 | 7.10 | 7.11 | 8 | 8.1 | | 8.2 | | 8.3 | | 8.4 | 8.5 | 8.6 | 8.7 | 8.8 | |
| 9 FENCE-VAULT | FT-IN | 3.6 | | | 3.8 | | 3.10 | 4 | | | 4.2 | | 4.4 | | | 4.6 | | 4.8 | | | 4.10 | 5 | | 5.2 | | 5.4 | | 5.6 | | | 5.8 | | | | 5.10 | |
| 10 SNIP-UNDER-BAR | FT-IN | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 3.10 | 4 | 4.2 | 4.4 | 4.6 | 4.8 | 4.10 | 5 | 5.1 | 5.2 | 5.3 | 5.4 | 5.5 | 5.6 | 5.7 | 5.8 | 5.9 | 5.10 | 5.11 | 6 | 6.1 | 6.2 | 6.3 | 6.4 | 6.5 | 6.6 | 6.7 | 6.8 | 6.9 | 6.10 |
| 11 5-POTATO -RACE | SECONDS | 22.1 | 22 | 21.4 | 21.3 | 21.2 | 21.1 | 21 | 20.4 | 20.3 | 20.2 | 20.1 | 20 | 19.4 | 19.3 | 19.2 | 19.1 | 19 | 18.4 | 18.3 | 18.2 | 18.1 | 18 | 17.4 | 17.3 | 17.2 | 17.1 | 17 | 16.4 | 16.3 | 16.2 | 16.1 | 16 | 15.4 | 15.3 | 15.2 |
| 12 8-POTATO -RACE | SECONDS | 41.4 | 41.3 | 41.2 | 41.1 | 41 | 40.4 | 40.3 | 40.2 | 40.1 | 40 | 39.4 | 39.3 | 39.2 | 39.1 | 38.4 | 38.3 | 38.2 | 38.1 | 38 | 37.4 | 37.3 | 37.2 | 37.1 | 37 | 36.4 | 36.3 | 36.2 | 36.1 | 36 | 35.4 | 35.3 | 35.2 | 35.1 | 35 | |
| 13 HALF-LEVER | TIMES | 1 | 2 | | 3 | | 4 | | 5 | | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | 18 | |
| 14 PULL-UPS | TIMES | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | 17 | |
| 15 PUSH-UPS | TIMES | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | 17 | |
| 16 ROPE-CLIMB | SECONDS | 18 | 17.4 | 17.2 | 17 | 16.3 | 16.1 | 15.4 | 15.2 | 15 | 14.3 | 14.1 | 13.4 | 13.2 | 13 | 12.3 | 12.1 | 11.4 | 11.2 | 11 | 10.3 | 10.1 | 9.4 | 9.2 | 9 | 8.3 | 8.1 | 7.4 | 7.2 | 7 | 6.3 | 6.1 | 5.4 | 5.3 | 5.2 | |
| 17 FREE-THROWS | GIRLS | | | | 1 | | | 2 | | | | 3 | | | | 4 | | 5 | | | 6 | | | 7 | | | 8 | | | | 9 | | | | 10 | |
| 18 BASKETS ONE MINUTE | GIRLS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 19 FOOTBALL-PUNT | FEET | 48 | 51 | 54 | 57 | 60 | 63 | 66 | 69 | 72 | 75 | 78 | 81 | 84 | 87 | 90 | 93 | 96 | 99 | 102 | 105 | 108 | 111 | 114 | 117 | 120 | 123 | 126 | 129 | 132 | 135 | 138 | 141 | 144 | 147 | 150 |
| 20 FOOTBALL-PASS | FEET | 48 | 51 | 54 | 57 | 60 | 63 | 66 | 69 | 72 | 75 | 78 | 81 | 84 | 87 | 90 | 93 | 96 | 99 | 102 | 105 | 108 | 111 | 114 | 117 | 120 | 123 | 126 | 129 | 132 | 135 | 138 | 141 | 144 | 147 | 150 |

Melrose, Mass., High School gives this battery of twenty tests to every boy taking physical education. At the end of the school year, his ten best marks are computed to give him his decathlon score. The fellows with the highest scores each receive a medal—the only prize the intramural program has to offer. The table also serves

as a basis for the gala track meet that winds up the intramural season. The decathlon records are studied carefully by a joint faculty-student committee, and the boys who made the outstanding marks in each of the events are selected to represent their class. The participants, however, compete only against opponents of their own strength.

A QUARTERMILE IN 47 FLAT

ROUNDING the turn into the homestretch of the 440-yard run at last year's I.C. 4-A meet (Randall's Island, N. Y.) are two of the greatest quartermilers of the day—John Woodruff of Pittsburgh and Erwin Miller of Southern California. At this stage of the race, Miller on the pole, is piling on the pace while Woodruff is roaring up on the outside. Both men are straining with legs and arms to gain an advantage.

Miller is running with his chest out and chin in but he does not appear to be tied up in the shoulders. As he strides along, he does not betray the faintest suggestion of a body roll. His body lean, like Woodruff's, is excellent, and he has not tightened up or broken form despite the threat at his shoulder. He carries his arms a little higher than Woodruff, while the Negro keeps his head further back.

The Pittsburgh giant is gifted with a bounding stride and a wealth of natural speed. At times he finds it difficult to keep a straight course, and wabbles from side to side. But he compensates for this idiosyncrasy with a stride that is supposed to measure over nine feet.

Anybody who has not seen Woodruff run will probably believe, after studying these pictures, that the nine-foot stride is a figment of some sportswriter's imagination. Upon studying the second picture on the left, you see Woodruff driving off his left foot while Miller is kicking up with his right. Following the runners carefully through the next nine pictures, we notice, as we arrive at the last picture, that both men have taken four and a half strides, and are now in almost the same relative positions as they were in the second picture.

The mystery is, why hasn't Woodruff passed him? If he has a nine-foot stride and is running with the same cadence as Miller, why hasn't he picked up some ground inside of four and a half strides?

Woodruff, incidentally, came on to win this race by one foot in 47s. flat, the third year in a row he won the race in that record tying time. Miller, believe it or not, was nosed out for second place by a teammate, Howard Upton.



The Application of Force in Running

How is force applied to the body in running? In March, Dr. W. W. Tuttle and George T. Bresnahan outlined their ideas on the subject. And now Professor Alfred W. Hubbard of Reed College comes along with a divergent school of

thought. The symposium is based on an exchange of letters with Scholastic Coach acting as a clearing house. Professor Cureton's article is reprinted from the February, 1935, Scholastic Coach as a neutral rationale.

Alfred W. Hubbard

IN THE March issue of *Scholastic Coach*, Messrs. Tuttle and Bresnahan collaborated on an interesting study of the mechanics of running, entitled, "Application of Force in Running." Although it is obvious that the University of Iowa men have carefully studied the subject, I believe several of their conclusions are open to question. My own work in the field* has convinced me that there is considerably more to running than merely applying force behind the center of gravity, despite the importance of applying it there in starting.

Following the period of rapid acceleration at the start, running ceases to be primarily a matter of "forcing" the body along. A runner, once accelerated, does practically no work in the physical sense. He raises himself against gravity somewhat less than an inch on each stride. He has relatively little wind resistance. He is relatively free of friction.

The runner's energy goes largely into generating and degenerating the momenta of the high-speed, reciprocal ballistic strokes of both the upper and lower limbs, by means of which he "rolls" along. The main axis of these strokes is horizontal, parallel to the runner's movement, and the main accent is forward. With these highly efficient strokes he keeps one or the other foot under him about two-thirds of the time and maintains or increases his momentum during the race.

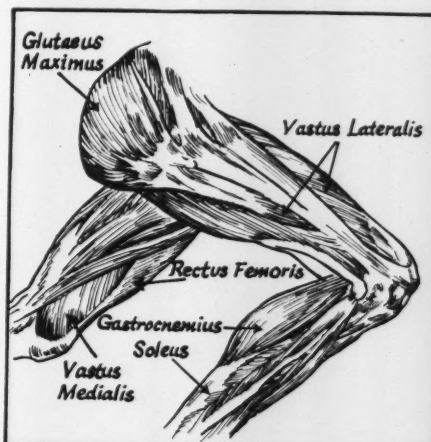
Besides supporting him, the limb beneath and then behind the runner serves to connect him with a solid base which absorbs the reaction as he generates the powerful, forward thrusts of the thighs and the less powerful thrusts of the arms.

Actually, the runner's primary concern is not in driving backward against the unyielding track or in pushing his center of gravity forward with the supporting limb, but in making a smooth, un-jarring stroke to the track, in developing effective momenta in the forward-moving upper and lower limbs while

W. W. Tuttle and G. T. Bresnahan

WE READ with interest Professor Hubbard's comments on our article "The Application of Force to the Body in Running." Such criticism is always welcome since it not only stimulates discussion, but also serves to prompt investigators to take greater care in the collection and interpretation of data.

Although we have never claimed that running was merely applying force to the body behind the center of gravity, we did attempt to point out in our article, that whatever force is applied to the body must necessarily be transmitted from behind the center of gravity. No at-



MUSCLE CHART showing the principal members involved in running. The quadriceps are the front thigh muscle group, and the hamstrings the group in the rear.

tempt was made to present a technical discussion of the running process, but rather to point out a few facts in a fashion understandable to the coach who is not a physicist. Our previous publications bear out the fact that we have recognized and have dealt with many phases of running, other than the application of propelling force. (See *Track and Field Athletics*, Chapter 16, and its accompanying bibliography.)

It is universally recognized that in running the body is not raised against the force of gravity to any great extent. Yet in no way does this disprove the fact that a runner expends a considerable amount of energy in propelling his body forward. It is well established that the de-

(Continued on following page)

Thomas K. Cureton

RUNNING is one of the oldest racial athletic activities, and the body of a runner exemplifies not only efficient construction for the task but is an epitome in nature of practically all mechanical principles.

Muscle force, which varies as the cross-section of the muscle and the mechanical arrangement of the fibers, is transmitted to the bones which act as levers. The levers create mechanical advantage either for force or speed, unless the levers are of the first class balancing type as some of the postural levers.

It is interesting to note that the leg as it swings back and forth in the hip socket under the pull of the hip muscles is a third class lever. This type of lever is the best type to transmit speed and large range of movement to its distal end. Since, in the human body this end is the human foot, the leg is an efficient third class lever to transmit speed of movement and a long range movement for the stride. The fulcrum is at the hip joint. The resistance is at the end of the lever and the force between the fulcrum and the resistance.

The leg is pulled forward by the thigh flexor muscles. It is pulled backward to the ground for the push by the glutei muscles and also the hamstrings. The muscles which bear the burden of the push against the ground are the quadriceps and the calf group. These act to straighten the leg at the knee joint and to extend the foot as it pushes.

The legs work back and forth in pendulum fashion. The muscles provide the greatest portion of the force rather than gravity in the physical pendulum. It is interesting to note that the leg can be recovered more quickly when the knee is bent. This is identical in principle with the law of the physical pendulum. If the length of the pendulum is decreased, it will swing faster.

Thus, the human body adapts itself well to the requirements of running. When a long and full hind-push is required, the leg operates at its full length to give the greatest possible distance to the foot in trav-

(Continued on following page)

**American Journal of Physiology*, 1938, pp. 300-313; *Research Quarterly*, October, 1939, pp. 28-38.

(Continued on following page)

Alfred W. Hubbard

supported by the opposite lower limb, in transmitting these momenta to the body and in coordinating the elements of the running cycle effectively.

Both the forward and backward strokes in the runner's reciprocal movement cycle are ballistic. Hence the actual muscular force precedes the momentum phase of the stroke that it produces. The muscular force that drives the limb backward is generated and acts unitarily on the limb to decelerate the forward stroke, reverse its direction and to accelerate the backward stroke. Once accelerated the limb enters the ballistic phase of its stroke during which it continues its movement by momentum.

The actual muscular force that drives the limb backward largely precedes the period when the foot is in contact with the supporting surface. During the period of contact the limb is, in essence, "following through." The gastrocnemius (calf-muscle), which might push the body by extending the foot, seems rather to maintain the ankle extension during the ballistic, forward throw of the thigh by the rectus femoris (and possibly related muscles) on the front of the thigh. It produces no visible effect on the movement cycle, and it ceases operations at about the same time the rectus femoris does.

If pushing backward were the primary thing, or even if pushing the body forward with the supporting limb were paramount, one would expect the elements of the running cycle to focus on the period when the foot is in contact with the supporting surface. Actually, we found the making and breaking of contact with the supporting surface so incidental to the backward stroke of the limb that it was not evident even in the stroke itself. It was necessary to use a special recording device to indicate when the contact was made and broken.

Although some forward-propelling force may be applied to the runner's center of gravity by the backward thrust of the limb coming into contact with the solid supporting surface, the runner's backward moving limb seems to have largely a supporting and postural function during the time the foot is below and behind the center of gravity.

Three marks of a trained runner are: first, he does not pound the track as his foot strikes on the backward stroke, but drives from it, in-

(Concluded on page 16)

W. W. Tuttle and G. T. Bresnahan

velopment of .324 small calories of energy expressed as heat is the thermal equivalent of one foot pound of work in the mechanical sense. We do not believe that anyone who contends that "a runner does practically no work in the physical (i.e. mechanical) sense" really means that the runner does practically no work at all.

The matter of wind resistance is another factor that cannot be passed over lightly. The rule makers themselves have taken cognizance of the effect of wind resistance by repudiating all records made with an aiding wind.

It is easy to demonstrate, and it is generally agreed, that reciprocal types of movements in which the arms and legs merely reverse their direction, consume a great deal of energy.

With reference to Professor Hubbard's claim that most of the forward propulsion is a result of forward motion of the opposite leg and arm, let us point out that action and reaction are equal and opposite. So, while the forward action will result in backward reaction, it will not result in forward propulsion unless the power developed is transmitted to the ground by the traction of the opposite foot. If this power is merely absorbed, as our critic suggests, the runner would stand still.

To illustrate, let a runner wearing slippery shoes attempt to run at high speed on glare ice. He will practically run in place. The reason for this has been proven time and again—the final force that propels the body forward comes from a backward thrust, the thrusting member being in contact with some resisting object.

If the propelling force in running comes from a short preliminary ballistic-thrust, the runner is making use of a very uneconomical and inefficient mechanism. The kinetic energy required equals the force times the period over which the force is applied. For example, if the force is applied over only one-fourth the period during which the foot is in contact with the ground, four times the force would have to be used to develop the same amount of kinetic energy that is generated when force is applied throughout all the time the foot is in contact with the ground. Thus, the ballistic type would be a most inefficient type of movement for running because of the tremendously greater amount of force required to develop the necessary amount of energy for propulsion.

(Concluded on page 16)

Thomas K. Cureton

elling backward under the body. When quick recovery of the leg is required, the knee is sharply flexed to take advantage of the law of the shortened pendulum. Such an arrangement, however, sacrifices force to gain a long-range stride. Other muscles and levers supplement the action to keep the force up to all that is required. The plantar muscles on the sole of the foot and the calf muscles aid tremendously, in fact, contribute most of the force together with the quadriceps in straightening the leg.

The extension of the foot as it acts to push the toes down against the ground is again a leverage system. Here the system is much more powerfully adapted for force. The fulcrum is in the ankle at the end of the fore-leg bone (tibia). The calf muscles shorten when in contraction and attempt to lift the heel.

The opposite end of the lever is at the ball of the foot. The pull of the calf muscles is transmitted to the ball of the foot through the muscles on the sole of the foot and through the bones which are bound together with ligamentous attachments. There is no dispute over the calf muscles being able to raise the heel. The balance cannot be maintained, however, if the center of gravity is back of the toes.

The strength of the calf group of muscles is very great. It is estimated that in a man with a well developed calf the contraction force would be at least 1,200 pounds. The ankle, knee and hip joints straighten much as a spring would uncoil after being compressed. In some experimentation with a mechanical model which was constructed to jump, it was found that the elastic bands which represented the calf muscles had to be greatly increased to get better results.

Externally, the force is applied to the ground to push it backward under the body as the body moves forward over the foot. Here again mechanics play an important part. Efficient running is governed by how well the available force is directed. If the force is mostly downward into the ground, the part of the push which acts backward with a reaction acting directly forward is small.

The mechanical principle involved is that the horizontal component of the applied force should be as large as possible. External friction must be overcome in the nature of ground friction (retarda-

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PITCHING DELIVERIES

Although a high school pitcher can get by with only a good fast ball, or an average hard ball and curve, it stands to reason that the wider variety of pitches he has, the better equipped he is to fool the batters. Time is too precious to waste on freak deliveries, but something special may be added to the pitcher's repertoire, such as the knuckle ball shown in the strips on the left and the right, after he has mastered the basic weapons—fast ball, curve and change of pace.

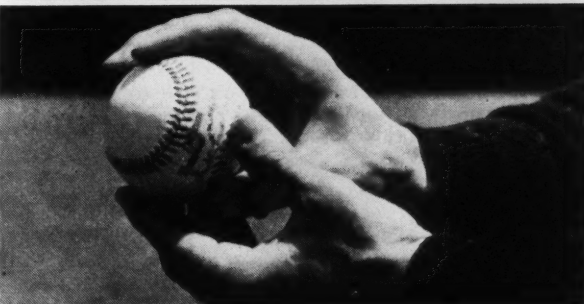
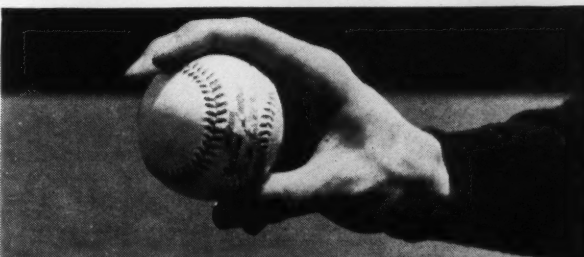
As in most deliveries, there is no standard way of gripping the ball for a knuckler. As a rule, however, one of three methods is employed. In one method (left), the ball is placed in the hand so that the first joints of the index and the middle fingers rest against the ball between the seams where they are narrowest. The other fingers encircle the ball and grip it tightly. On the release, the bent fingers push outward and lend additional impetus, or speed.

From the pictures on the right, it can be seen that the second method of gripping the knuckler is quite similar. Here, however, the ball is rested against the tips of the same two fingers, and less pressure is exerted by the three supporting digits.

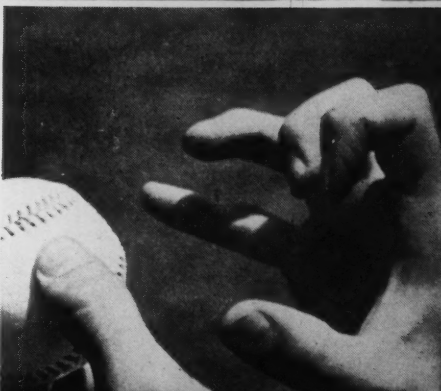
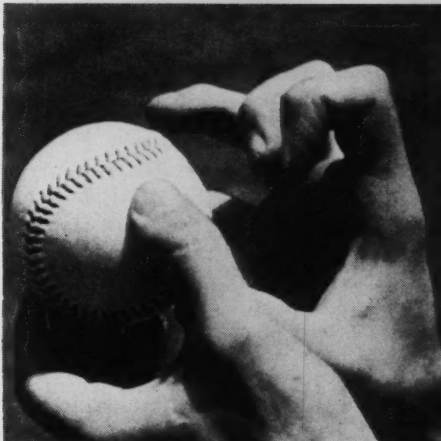
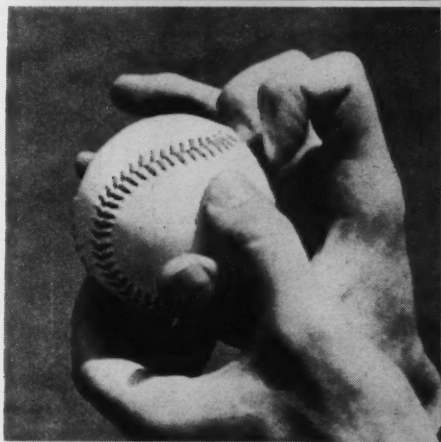
In the first method, a decided forward wrist snap is required on the release, which, abetted by the extension of the bent fingers, imparts a slight spin to the ball. In the second method, the ball rarely rotates since the fingers remain stiff as the ball leaves the hand.

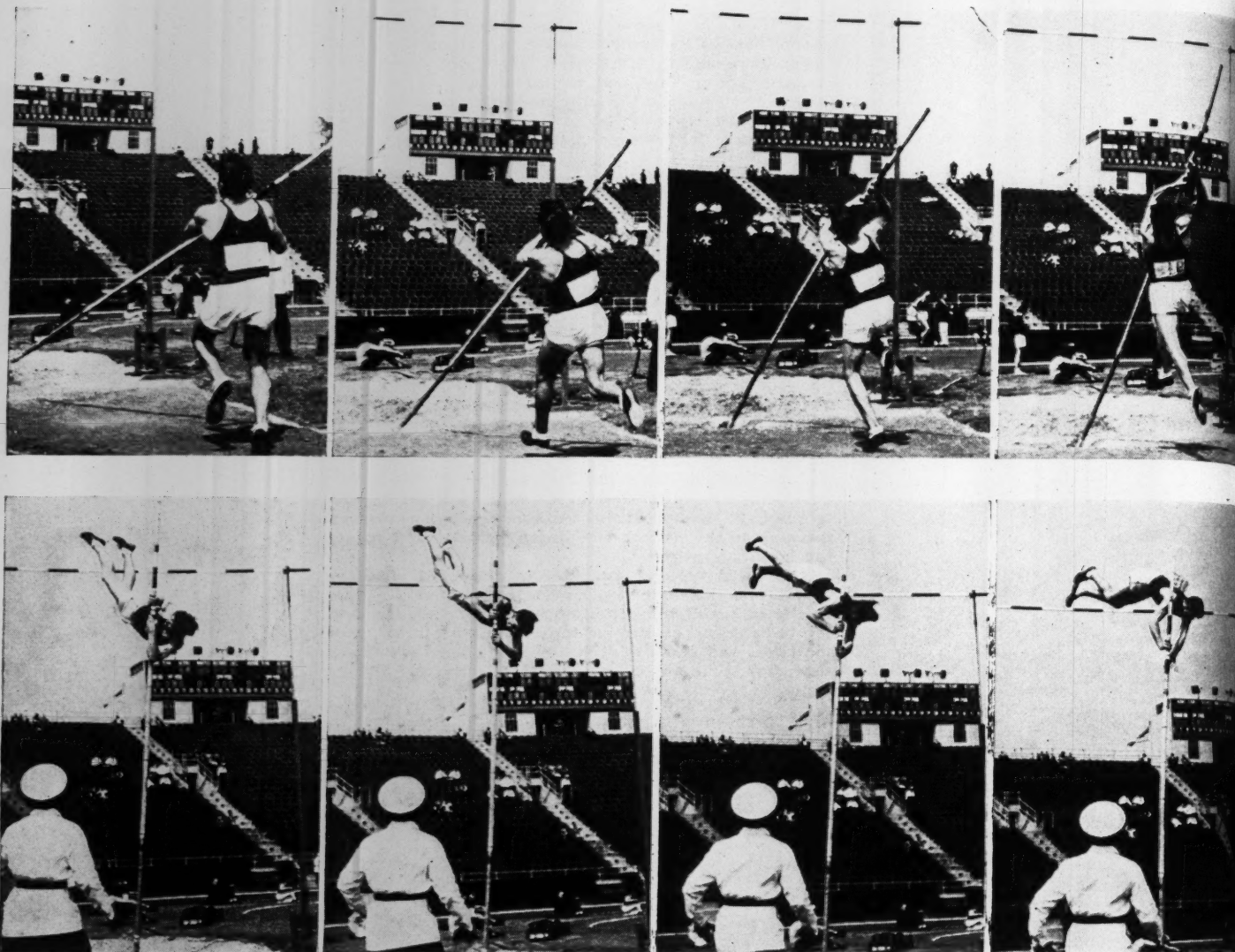
The third type of knuckler is delivered with the thumb and the little finger pressing against the sides of the ball and the other fingers bent with the first joints bent and resting on top of the ball. In all three methods, the end result is the same: the ball floats up to the plate and then breaks abruptly.

(From National League's film, "Play Ball, America!" through the courtesy of Ethan Allen of the National League's Film Bureau.)



THE FAST BALL (above) is pitched for speed, of course, and hence is rolled off the tips of the index and middle fingers with a natural forward break of the wrist. This gives the ball a slight spin, rotating it backward toward the pitcher. A decided wrist snap at the moment of release imparts a tremendous amount of speed to the ball.





LORING DAY OF SOUTHERN CALIFORNIA, flying through the air with the greatest of ease at the I. C. 4-A's last year at Randall's Island (N. Y.). The pictures show how he blends at least five distinct movements into a smooth, apparently effortless ascension. After obtaining optimum speed, he places the pole in the box (first picture, top strip) and shifts his left hand up close to his right. Since he is a right-hand vaulter, he takes off from his left foot. Before putting the

muscles of his back and shoulders into play, however, he allows the momentum from his run to carry him as far forward as possible. As he goes up, he keeps his arms well extended and his body close to the pole. In the fourth and fifth pictures, the right leg has started to rise and aids the pole in its upward flight by continuing forward. As the pole approaches a perpendicular position, Day calls on his shoulder, arm and back muscles for the pull-up (sixth and seventh

Alfred W. Hubbard

(Continued from page 14)

dicating that the stroke essentially parallels the supporting surface; next, he has a high-knee action because of the high-velocity, momentum-full thrust; and third, he has a similar, forward-driving arm action.

To be effective these forces must either act on a solid base or have a solid base to absorb the reaction.

In running, the solid base is reached through the supporting limb as the supporting limb is below and behind the center of gravity of the runner. There is, however, considerable doubt whether a sound thesis can be developed from this last, simple fact to the exclusion of other and conceivably more important factors in the running cycle.

As a postlude to a consideration

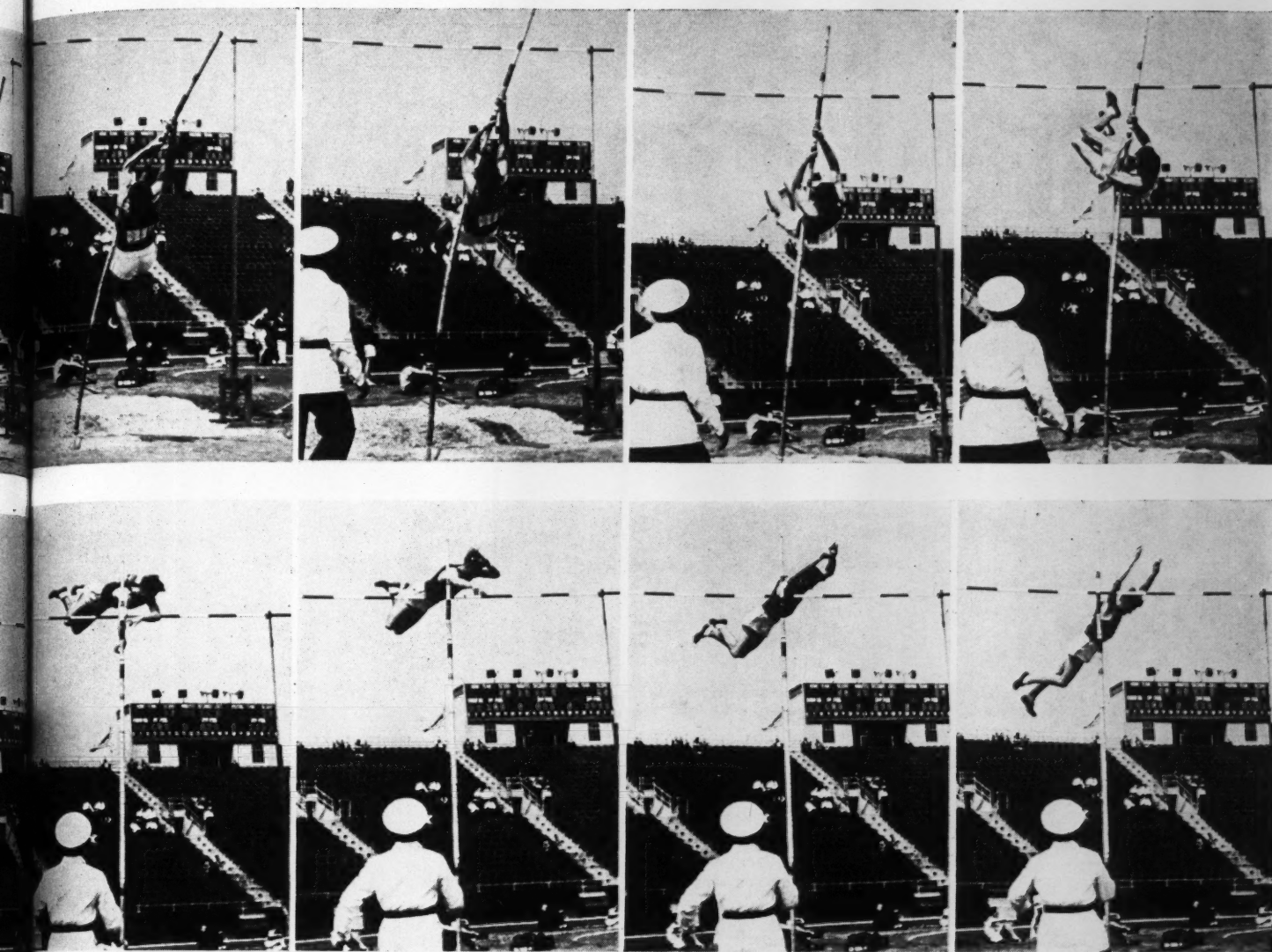
of the general thesis, consider the statement the authors make in the discussion of starting, "When the gun is fired the hands are lifted, thus permitting the body to fall. Soon (about .3 seconds) after the body starts to fall, force is applied . . . etc." The center of gravity of a man in starting position is only about two and a half feet off the ground. Until the law of gravity is repealed, anybody upon being released will drop about 1.359 feet in .3 seconds. If a sprinter waited until his center of gravity had dropped almost a foot and a half, it would only be about a foot off the ground and he would be in no position to run. The answer is not that the Iowa trackmen can take three deep breaths and ignore gravity, but that the authors have merely misquoted themselves (*Track and Field Athletics*, p. 463).

W. W. Tuttle and G. T. Bresnahan

(Continued from page 14)

sion. Since the higher the speed of the muscle's contraction the less is the available force, a ballistic movement during the beginning of the movement only would greatly reduce the possible speed, since four times the needed force is not possible at this high speed.

These facts are substantiated by Professor Hubbard's own data (*Research Quarterly*, Oct. 1939). His statement that the rectus femoris muscle (on front of thigh) ceases its action shortly after the beginning of the backward stride, is not, of course, evidence in favor of a ballistic movement. Such action is due to the fact that the rectus femoris must lengthen as the leg goes backward. With due deference to Profes-



pictures). The forward-upward momentum is still operating, but since he must face the runway in order to get the most out of his pull-up, it is necessary to execute a half turn. He accomplishes the twist and pull-up simultaneously, by permitting his legs to swing unchecked until they arrive above the bar. At this point (first picture, lower strip), he pushes up hard on the pole and kicks his legs up and out. This turns him around into a handstand position facing the run-

way (second and third pictures). The pole is now in a vertical position and Day is ready for the throw-away. A powerful push downward of both arms elevate the hips still further above the bar (fourth picture), and Day then releases the pole with a slight flip of his hands away from the pit. The hands are thrust overhead, away from the bar, and the vaulter, perfectly relaxed, drops to the pit feet first. When he lands, he will roll over to break the shock of the fall.

tor Hubbard (*American Journal of Physiology*, 1938), muscles do not push when lengthening.

In the first reference, Professor Hubbard shows that the beginning of the action of the gluteus maximus (extending over the hip and thigh) slightly precedes the beginning of the downward movement of the foot, and continues approximately for two-thirds of the stride which is about the length of time the foot is on the ground. When the foot leaves the ground, just as with the arms in the "follow-through" in golf, the momentum of the limb carries it on until restrained by the flexors (muscles on rear of thigh). This is borne out in Professor Hubbard's data on the action of the rectus femoris.

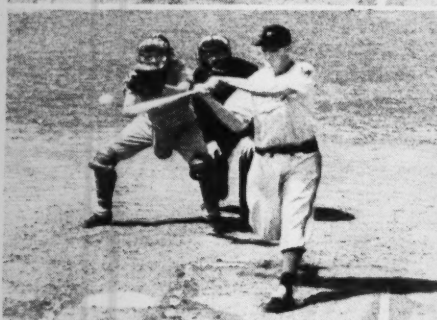
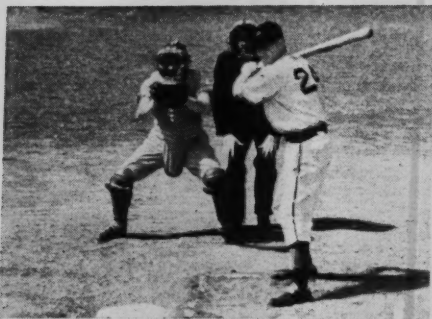
In mentioning his special recording device, Professor Hubbard states that it does not record the making

and breaking of contacts with the track. Two things may be pointed out on this score: (1) the apparatus records only action currents and muscle thickening and not the amount of force expended, and (2) that the backward force, exerted by extensor muscles (on front of thigh) must of necessity precede the contact of the foot with the ground in order to stop the forward motion of the leg and foot and to propel the limb backwards fast enough for the foot to contact the ground with a speed slightly greater than the forward movement of the body.

Furthermore, the muscle thickening will continue so long as the limb continues backwards even though no force is being exerted by the muscle. This backward movement of the thigh, however, ceases before the foot's backward action ceases.

As to the contraction of the vastus medialis (a thigh muscle just above the knee), as soon as the knee straightens out after the foot contacts the ground, this muscle no longer shortens, since knee extension has ceased. Most of the force exerted to extend the hip joint backwards while the foot is in contact with the ground is supplied by the glutei and the hamstrings.

With reference to Professor Hubbard's statement concerning the effect of gravity in the start, it should be remembered that in starting, the human body is not a freely falling object. The truth of the matter is, the sprinter falls very little (by no means 1.359 feet) because of both the physical relationship of the weight to the support and the resistance of the body to the fall by active muscular tension.



Step and Swing

The smooth, powerful swing that is the trademark of the big league batter is evident in this action sequence of Bob Elliott, Pittsburgh Pirate outfielder. He delays his step until he ascertains the direction of the pitch. Perceiving that it is coming straight down the alley, he steps directly forward. The arms lag for a fleeting moment and are then whipped forward with a loose but powerful action.

The next to last picture in the second column shows the actual hit. It is clear that the contact is made in front of the plate as the weight shifts to the front foot.

(These pictures appear in the National League's film, "Play Ball, America!" and are presented here through the courtesy of Ethan Allen, of the National League's Film Bureau.)



National Basketball Round-Up

What the State High School Champions Used on Offense

ALABAMA: The champions used a combination fast and slow break offense. They broke fast every chance they had, especially on interceptions out of a zone defense. For set plays, they deployed in a double pivot with the spot man playing in the curve of the circle and lane, or in the front half of the circle.

ARIZONA: The winners employed a combination fast and slow break offense, while the runner-up used a slow break around a pivot-post.

COLORADO: As a rule, the championship teams used a combination of slow and fast breaks.

CONNECTICUT: The A victors used a fast break and took many pivot shots from the bucket or near by. The B champions' offense featured a set shot attack from the sides, especially when working through a zone defense. The C-D victors worked the ball up fast from the outside lanes for close-up shots from the bucket.

GEORGIA: Most teams used a slow break offense with set plays. Others relied on the fast break and used set plays when the defense was ready for them. The B winners played a long-range shooting game against set defenses. The C champions used a fast break but combined it with set plays to take advantage of their unusual height.

IDAHO: Both A finalists employed definitely set offenses. The B winner was a fast breaking outfit.

ILLINOIS: Great use was made of the four-foot end area. Pivot-post men were used but not excessively. Players have become so expert at shooting over a zone and moving in to the basket from the end area, that the zone is no longer effective.

INDIANA: The titleholders used a three-in two-out offense. They were big and used their height to advantage under the basket on tip-ins and control of the rebounds. Their height and weight proved too much for the runner-up's deliberate two-in three-out attack.

IOWA: The winners used a short passing game to work the ball in for close-up shots. They wouldn't shoot until they penetrated the area inside the free-throw line.

KANSAS: The A champions employed a delayed offense that was built around a single post.

KENTUCKY: While both finalists were capable of playing a slow game, they used a fast break with a long-shot-follow-up alternative when the break failed.

LOUISIANA: The A winners employed a four-man revolving attack with an occasional fast break. The B team used a fast break all the way through.

MICHIGAN: In general, teams tried to score in a hurry with a fast break. If they couldn't go all the way, they usually fell back on a deliberate passing game in the front court.

MISSISSIPPI: The winners worked around a pivot man in the outside half of the circle.

MISSOURI: The B winners had a well-balanced outfit that relied on a quick breaking offense. When slowed down, they resorted to short, lightning-like thrusts out of a beautiful short passing game deep in the frontcourt.

MONTANA: Both champions broke fast when possible, and used single pivot-posts with guards and forwards attempting screens.

NEBRASKA: The A winners employed a fast break during most of the tournament, which was particularly effective in the semifinals and in the last half of the championship game. The losers combined a fast break with a set attack built around a tall man in the pivot.

Summary

The trend toward the fast break in recent years seems to be one of emphasis rather than change. The set play is not on its way out. It is merely being subordinated to the more spontaneous fast break.

According to this study of 34 states, most teams are trying to score in a hurry, rushing two or three men down court immediately upon gaining possession. Only when this opening fails to materialize do they fall back on more deliberate tactics.

(For a review of defensive trends, turn to page 22.)

NEVADA: While the victors were using a fast-moving offense with no set pattern, the runner-up attempted to handle and control the ball until an opening for a good set shot materialized.

NEW HAMPSHIRE: The A champions employed a rather slow break in the final game, letting the defense get set. During the late stages of the game, they held the ball back near the center line and forced the zone to come out after them.

NEW MEXICO: Both finalists used a deliberate slow breaking offense, featuring plenty of shooting and good follow-up work.

NORTH DAKOTA: The A champions used a fast break whenever possible, and then dropped into a three-out two-in alignment. The B victors used a fast break sparingly. They played conservative ball, doing a lot of crossing in the backcourt until a man could drop into the pivot. Three men followed the rebounds.

OHIO: A slow break offense with accurate passing and methodical floor play paid dividends for the team that annexed A honors. The B victors depended upon a fast break.

OKLAHOMA: As a general rule, the offensive pattern depended upon the type of defense encountered. Against the man-to-man, the men moved; against the zone, the ball moved with the men deployed in strategic spots between the zones. The A champions used a fast break with two small guards to bring the ball up court and do most of the ball-handling.

OREGON: Both the A and B champions relied on a fast breaking mode of attack.

RHODE ISLAND: Most scoring throughout the season was accomplished through the medium of a fast break.

SOUTH DAKOTA: The A champions broke very fast, making telling use of their fine reserve strength.

TENNESSEE: Both the winners and the runner-up employed the fast break type of offense.

TEXAS: The championship team used a slow, deliberate pass-and-break game, built around a tall pivot man.

UTAH: The champions used a combination fast and slow break. They picked up many points by driving in hard and tipping in the rebounds.

VERMONT: The A and B victors broke fast and did a lot of shooting. The former operated from a two-in three-out setup, but used the slow break only occasionally. They would stall to protect a lead.

WASHINGTON: The titleholders worked in under the basket for layups by rapid handling of the ball. They had no compunction, however, about throwing 'em up from outside the defense. The focal point of the runner-up's attack was a tall center in the keyhole.

WEST VIRGINIA: Both finalists used a fast break when possible and set plays. The A champions used screen plays and worked the ball into position for jump shots.

WISCONSIN: The fast break still remained the chief method of attack.

WYOMING: Both A finalists used the double pivot post as a base and varied it with a single post, using three men in and two out. The champions had two 6 ft. 3 in. giants to play the pivot and three fast, clever feeders.

QUINSANA POWDER ACTS 2 WAYS:

QUINSANA is used not only on feet, but also in shoes. Treatment of shoes is an indispensable part of any rational therapy for Athlete's Foot. The organisms causing Athlete's Foot thrive in shoe linings, and unless killed, are always likely to cause re-infection. Ointments and liquids cannot be used in shoes . . . this is an important reason why Quinsana powder is producing such excellent results.

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QUINSANA has proved remarkably effective in thousands of cases. Consider the following mass-eradication project in which 1270 citizens of a Southern town were treated for 30 days with Quinsana. Results are typical of those obtained with Quinsana in many thousands of other cases: → → →

| GROUP TREATED | Percentage having Athlete's Foot | { Before Treatment with Quinsana After 30 Day Treatment with Quinsana | |
|----------------------------|----------------------------------|--|------|
| | | | |
| FIREMEN | 96.6% | | 7.3% |
| POLICEMEN | 95.8% | | 2.2% |
| NURSES | 91% | | 9.3% |
| COLLEGE MEN | 92.4% | | 7.2% |
| COLLEGE WOMEN | 70.4% | | 6.0% |
| CHILDREN under 12 years | 46.6% | | 0.6% |

QUINSANA OFFER TO YOU:



We wish to demonstrate to YOU that Quinsana can control Athlete's Foot for those whose health is directly or indirectly in your charge. Therefore, we offer to send you without charge, several large cans of Quinsana (regular 3 oz. pharmaceutical size), each containing enough powder for adequate treatment of one case of Athlete's Foot. You are requested to report results obtained (it is understood that this information is NOT for publication). The need for a drive against Athlete's Foot is great—your cooperation is urged now. *SEND ATTACHED POSTCARD.*

THE MENNEN CO., Newark, N. J.

National Basketball Round-Up

What the State High School Champions Used on Defense

ALABAMA: The champions used a two - one - two zone throughout the tournament.

ARIZONA: The winners employed a tight zone defense; the runner-up, man-to-man.

COLORADO: Every team in the championship round played the man-to-man type of defense.

CONNECTICUT: The A champions played man-to-man; B, modified zone; and C, both man-to-man and zone according to the opponents' setup. All runners-up were exponents of the zone defense.

GEORGIA: Although the zone was the most popular form of defense, several teams used it in combination with the man-to-man. The B victors employed a shifting zone; C, straight zone; and D, man-to-man.

IDAHO: Both winners relied on the man-to-man. The zone defense was not very popular in this state.

ILLINOIS: Straight zone defense was not effective. Teams fell back into zone alignments but picked men as they sifted through. At times, the defense harried the attackers by covering all over the floor.

INDIANA: The champions played straight man-to-man with very little shifting. The losers' shifting man-to-man was effective in the preliminary games but could not cope with the victors' drive and screen attack.

IOWA: Both the winners and the runner-up played a man-to-man defense that frequently shifted.

KANSAS: The victors used a shifting zone; the runner-up man-to-man.

KENTUCKY: In the final game, the champions used a zone in the first half, a regular man-to-man for most of the second half and an all-court man-to-man in the closing minutes. This versatility turned what looked like sure defeat into victory. The losers played zone all the way through.

LOUISIANA: All A teams used the man-to-man during the entire tournament. About half the B teams, including the champions, who used a two-out three-in zone, relied on the zone type defense.

MAINE: The winners employed a "T" defense with the cross at the foul line. The runner-up played man-to-man.

MICHIGAN: In three of the four final games in the Lower Peninsula finals, the man-to-man was used exclusively. In the other game, one team played zone.

MISSISSIPPI: The championship game was a battle between the victors' man-to-man and the losers' zone.

MISSOURI: Both the B winner and the runner-up relied on the man-to-man type of defense.

MONTANA: With the exception of the B runner-up, all finalists in the A and B tourneys employed the man-to-man.

NEBRASKA: Although the A champions used a shifting zone during most of the tournament, they were ready to shift to the man-to-man when necessary. In fact, they relied on the man-to-man during most of the final game.

NEW HAMPSHIRE: The A winners used a man-to-man; the runner-up a five-man zone. In the final game, the losers seemed nonplused by the failure of the opponents to rush them as other teams had done.

Summary

According to a study of 36 states, the past basketball season saw the zone defense gain new heights of popularity. Last year, in spite of a rising tide toward zone defense, Scholastic Coach's study showed that about three out of four high school teams were still playing man-to-man. This year, of the 80 teams on whom reports were received, 33 played zone, which is better than three out of five.

The trend, however, was not universal. Five states reported that the man-to-man was practically a standard defense in their territories, while only two states could say the same for the zone. Many coaches cleverly combined the two defenses, shifting from one to the other at will.

(For a review of offensive trends, turn to page 19.)

NEVADA: Both finalists employed an all-court man-to-man throughout the entire tournament.

NEW JERSEY: Man-to-man was the most popular mode of defense, although many good teams depended on the zone.

NEW MEXICO: The shifting zone was used by both finalists during the entire tournament.

NORTH DAKOTA: All four finalists employed the man-to-man. Although the A champions had used an all-court man-to-man in previous games, in the final they dropped back to cope with the opponents' fast break.

OHIO: Of the 32 teams participating in both classes, almost half employed the zone. The A winners used a shifting zone, and the B a combination of the zone and man-to-man.

OKLAHOMA: The A champions played a combination of man-to-man and zone, and the B and C winners straight zone defense. All three runners-up employed the man-to-man.

OREGON: Both the A and B winners played zone, the senior team checking far down the court in the last game.

RHODE ISLAND: Very little man-to-man defense was in evidence this season. Both the state champion (A winner) and the runner-up played zone.

SOUTH CAROLINA: The man-to-man was used almost entirely throughout the tournament.

SOUTH DAKOTA: In the A tourney, all teams used tight man-to-mans that occasionally extended over the entire floor. The B winners played a three-in two-out zone, that was successful because of the exceptional speed of the forwards and the effectiveness of the center under the basket.

TENNESSEE: Both finalists relied on the man-to-man defense.

TEXAS: With only one exception, all the tourney teams played man-to-man defense. The champions used a man-to-man that picked up at the center line. The runner-up covered all over the floor.

UTAH: The winners used a zone that was very aggressive under the backboard. The runner-up depended heavily on the five-man defense.

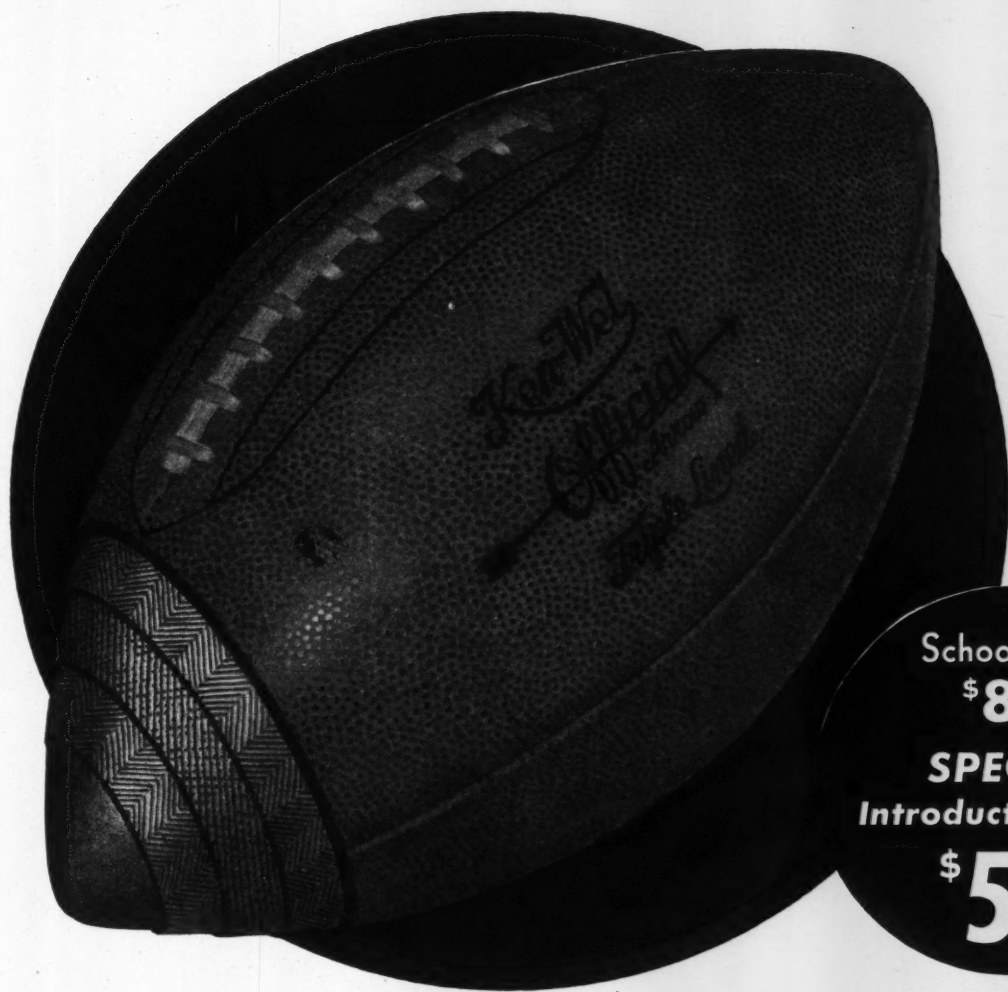
VERMONT: Both A and B victors played man-to-man and checked all over the floor at times. The C champions relied on a three-two zone. The zone defense was not highly regarded by the larger schools.

WASHINGTON: Both finalists kept changing their defenses during the tournament, and fell back on the zone for the final.

WEST VIRGINIA: The winners and the runner-up used the man-to-man throughout the tourney. The victors retreated upon losing the ball and picked up the attackers as they came down the floor. The losers covered all over the court.

WISCONSIN: Zone defense was used quite generally, with a little man-to-man during the closing stages of close games.

WYOMING: While the A champions were using a three-in two-out zone throughout the tournament, the runner-up was playing zone in two games and man-to-man in the two others, including the final.



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FINE WORKMANSHIP SPEAKS FOR ITSELF

State High School Basketball Tournaments, 1940

| Prevalence of One-Hand Shooting | Total Attendance During Tournament | No. of Schools (teams) in Championship Tournament | No. of Schools Competing in State Basketball During 1939-40 Season | Season Record Won-Lost | Coach | Winner |
|--|------------------------------------|---|--|------------------------------|--|--|
| About one out of three shots were taken with one hand, mainly from close in and on the run. A higher percentage of these were made than two-hand tosses. | 2,000 | 16 | 285 | | Buddy Braley | Marion County |
| More one-hand shooting than ever before; practically all these shots were made on the run. | 4,962 | 16 | 52 | 21-3 | Frank Brickey | Duncan |
| | 10,000 | 11 in each class | 405 | | A-C. E. Gels B-L. Williams | A-Jonesboro B-New Edinburg |
| NO STATE CHAMPIONSHIP IN CALIFORNIA | | | | | | |
| Very little one hand shooting in championship games. | 10,800 | A-8 B-16 | 213 | | A-G. Grosvenor B-Lester Hay | A-Centennial B-Rocky Ford |
| More one-hand, on-the-run shooting than in any previous tournament, especially by A champions. B and C-D victors relied on the traditional set type of shooting. | 21,000 | 8 in each class | 98 | A-22-1 B-18-3 C-D-20-0 | A-Harry Lyon B-L. Fernald C-D-Hugh Greer | A-Bassick B-Lyman Hall C-D-Elsworth |
| NO STATE CHAMPIONSHIP IN DELAWARE | | | | | | |
| | 2,000 | 16 in each class | 260 | | A-W. Kirkhour B-P. L. Worley | A-Robt. E. Lee B-Perry |
| About 5% more one-hand shots were taken than two, and were about 4% more successful. Most one-handers were taken on the run, others off a pivot or dribble to corner and push-up. | 2,000 | B-10 C-10 D-5 | 435 | | A-R. W. Dent B-I. E. Nickols C-Miss A. B. Mullis | B-Clarkston C-Lyerly D-Cottondale |
| Of the 813 shots taken in the A tourney, 615 were tossed with one hand and 198 with two, 160 one handers were converted (26%) and 40 two (20%). | A-5,000 B-3,000 | 8 in each class | 170 | | A-Walt Carle B-Onan Mecham | A-Emmett B-Weston |
| An average of 82 one-hand shots were taken per game, of which 22% were successful. Most of these were taken in rapid motion, but even when set, players would often let fly with one hand. | 46,000 | 16 | 918 | | Byron Bozarth | Granite City |
| One-hand shooting was very prevalent. Most of these shots were taken on run or dribbling toward an opponent and shooting over his head. | 15,000 | 4 | 800 | | Lou Birkett | Hammond Tech |
| Smaller schools mostly used the one-hand shot. Practically all these tries were made on the run. | 60,000 | 16 | 886 | 32-0 | Judge Grimsley | Mason City |
| Less set shooting noticed and an increase in one-hand shots. Players came across from a forward position and shot from free-throw lane. | A-13,500 B-8,000 | 16 in each class | 760 | B-24-4 | A-Ollie Thomas B-Harold Binford | A-Winfield B-Buhler |
| Seemed to be less wild shooting this year than in preceding years. Not many one-hand shots taken. Those attempted were made at close range off pivot —not on the run. | 16,268 pd. | 16 | 554 | 16-9 | C. H. Wyatt | Hazel Green |
| An increase was noted in one-hand shooting. | | 24 in each class | 325 | 42-8 | A-J. D. Cox | A-C. E. Byrd B-Pride |
| | | 16 | 235 | | A-R. L. Whitmore B-John Sheehan | A-Cheverus B-Shead |
| NO STATE CHAMPIONSHIP IN MARYLAND | | | | | | |
| NO STATE CHAMPIONSHIP IN MASSACHUSETTS | | | | | | |
| In general, the teams used an open style of play, featuring both one-hand and two-hand shooting. Considerable shooting was done without first getting set. | U.P.—4,100 L.P.—18,000 | U.P.—16 L.P.—32 | 740 | | | No state wide finals. Upper Peninsula and Lower Peninsula championship in different classes. See p. 56 in April for winners. |
| | 34,145 | 8 | 480 | | Walt Mikulich | Breckenridge |
| | 9,000 | 8 | 600 | | F. B. Zeech | Rumelstoen |
| Less one-hand shooting than in last year or two. Most of these tries were made without getting set. | 19,000 | 48 | 550 | A-20-3 B-18-3 C-25-1 | A-M. H. Palrang B-G. W. Littrell C-H. C. Jones | A-Creston B-Winnabago C-Thayer |
| One-hand shooting was very popular with most shots | | | | | | |

| State | Score | Time | Shots | Notes |
|----------------|--------------------|-------------|-------|---|
| MISSISSIPPI | 19,000 | 48 | 550 | Long one-hand shooting than in last year or two. Most of these tries were made without getting set. |
| NEBRASKA | 2,897 | 8 | 32 | One-hand shooting was very popular with most shots being attempted on run. Sparks' victory was achieved through one-hand shooting with an excellent rebounder following up. |
| NEVADA | 8,000 | 20 | 64 | One-hand shooting increased. It was mostly done on the run when going directly toward the basket. |
| NEW HAMPSHIRE | 49,000 | 20 | 140 | The traditional two-hand shot was most commonly used in tournament play, with plenty of firing at long range. |
| NEW JERSEY | 5,000 | 16 | 125 | Most shooting was done with two hands from set position. Few one-hand shots. When tried, it was usually from set position, except for crib shots. |
| NEW MEXICO | 1,750 | 4 | 95 | One-hand shooting was very much in evidence, from all parts of the floor both on the run and from set positions. Most boys passed up set shots, if in the clear, took one dribble and let go with one-hand push shots. |
| NEW YORK | 12,480 | 8 | 300 | With the exception of blank-range shooting, there were practically no one-hand shots. |
| NORTH CAROLINA | 4,800 | 8 | 732 | There was a great deal of one-hand shooting under the basket. The boys had good body balance on these shots. |
| NORTH DAKOTA | 35,000 | 16 | 1,145 | When shooting on the run, players used the one-hand shot. For set shooting, they threw 'em up with two hands. |
| OHIO | 34,299 | 12 | 730 | Exceptional amount of one-hand shooting this year, with shots being taken on run and from any position. |
| OKLAHOMA | 3,800 | 6 | 27 | No noticeable difference in style of shooting. |
| OREGON | 6,000 | 20 | 250 | With the exception of one player on the Pelzer team, who shot frequently and well with one hand, very few one-hand shots were tried. |
| PENNSYLVANIA | A-4,000 B-4,500 | A-4 B-8 | 315 | In the B tourney, there were two Indian teams that used the one-hand shot almost exclusively, seldom from set positions. There was more set shooting in the A games, but at least half of the shooting was with one hand, many on the go. |
| RHODE ISLAND | 2,595 | 8 | 411 | Most players got set before shooting and used both hands for the shot. |
| SOUTH CAROLINA | 6,000 | 8 | 1,500 | One-hand shot quite popular. Pivot men shot with one hand from stationary positions. In other spots, the players were moving and shot on the run. |
| SOUTH DAKOTA | 28,000 | 16 | 74 | A definite trend toward one-hand shooting was noted. An average of 65 one-hand and 34 two-hand shots were made per game. Many players used the one-hand push shot in free shooting. |
| TENNESSEE | | 8 | 112 | Very little one-hand long shooting, or set shooting. Quite a bit was in evidence, however, from a pivot, or on the run at blank range—six to ten feet out. |
| TEXAS | 21,882 | 16 | 285 | Although most players got set before shooting, the difference between the average good marksman and the sharpshooter was the ability of the latter to put 'em on the run with one hand. |
| UTAH | 11,000 | 8 | 212 | Few long shots were taken with one hand; most of these shots were taken from within 15 feet of the basket. Most one-handers were taken on the run. |
| VERMONT | 12,000 | 16 | 462 | One-hand shots more prevalent than ever before; usually taken on the run. |
| VIRGINIA | | A-16 B-8 | 81 | Several teams had at least one boy who shot with one hand while on the run. One team had three such shooters. |
| WASHINGTON | | | | |
| WEST VIRGINIA | | | | |
| WISCONSIN | | | | |
| WYOMING | | | | |

several teams
hand whil
shooters

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A GAIN may we take the liberty of reminding you that it pays to play ball with the manufacturers by ordering your equipment early. The manufacture of modern equipment demands more in the way of time and workmanship than ever before. Not only are high school and college coaches demanding equipment that is serviceable, but many insist upon unique designs and intricate color combinations. The best way to assure yourself of superior merchandise is to place your order during the spring months. Your cooperation with the manufacturers is your guarantee of a quality job at a fair price with prompt delivery.

In this issue and other spring issues of SCHOLASTIC COACH, various manufacturers will announce and display their 1940 line of equipment. Cooperate with them by giving them your order early this spring. It will facilitate the job of the manufacturers and insure delivery of your equipment well in advance of the season. Take advantage of this opportunity *now*.

“It Pays to Order Early”

DURENE ASSOCIATION OF AMERICA

468 FOURTH AVENUE

NEW YORK

TELEPHONE MURRAY HILL 4-3312

DEAN HILL, PRESIDENT

Dear Coach:

Scholastic Coach for February 1940 carried a center spread poster "Four Health Rules to Help Avoid Colds". A few weeks ago, we questioned several hundred coaches throughout the United States as to the value of this poster to them; more than 83% advised us they had displayed these posters on their bulletin boards with good effect. Because of this excellent cooperation, we are presenting to you on the two following pages, a second poster designed to help you in your effort to maintain a high standard of physical fitness among your students.

This poster can be readily lifted out of the magazine for posting in a conspicuous place. A limited number of additional copies are available without cost on request.

On the page following the poster, you will find some interesting facts disclosed by a comprehensive survey to discover the types of jerseys now used by high school football squads. We believe that these results may be helpful to you when you are selecting new equipment.

The booklet "Don't be Dopey" which briefly presents a few simple health rules has been very popular and a second large printing of this booklet is now on the press. If you have not received copies of this booklet for your students or if you would like to have additional copies, please order same promptly. They will be sent to you without cost; a postal card for your order is attached to this page.

We believe that the poster in this issue "Keep Your Shirt On" has particular point at this time of the year. The habit of going without undershirts, especially in the summer time, has been growing. As you know, this habit is unwise from a health standpoint as well as unhygienic. We believe you will agree that it should be discouraged.

I wish personally to thank you for your cooperation.

Sincerely,

*Dean Hill*Dean Hill, President
Durene Association of America

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says:

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n shirts and shorts. They absorb and evaporate
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MARTIN W. SOUDERS

Director of Athletics
Phillips Exeter Academy

says:

"The boys like to wear 'Durene' jerseys because they feel good next to their skin. 'Durene' mercerized cotton absorbs and evaporates perspiration quickly and protects against chilling. Because of the excellent wear experienced over nine playing seasons it is a real economy for us to use it."

free booklet "Don't be Dopey!"

ATHLETIC garments of Durene yarn give players a big advantage, especially when the going is tough. Durene mercerized cotton absorbs and evaporates perspiration twice as fast as unmercerized cotton—keeps players cooler, fresher, more comfortable. No wonder that famous coaches everywhere say that “Durene” is best for athletes.

Recently an extensive survey was made among football coaches at colleges and high schools to discover how many had learned the advantages of “Durene” for game and practice jerseys. The figures below show percentage of teams using “Durene” in various sections of the country. More and more, coaches are specifying “Durene” and placing orders early for football jerseys.

| | “DURENE” GAME JERSEYS | | “DURENE” PRACTICE JERSEYS | |
|------------------------|--------------------------|--------------|------------------------------|--------------|
| | Colleges | High Schools | Colleges | High Schools |
| New England | 33% | 12% | 53% | 50% |
| Middle Atlantic | 35% | 16% | 50% | 50% |
| South Atlantic | 66% | 39% | 34% | 64% |
| East No. Central | 51% | 50% | 47% | 50% |
| East So. Central | 94% | 40% | 40% | 40% |
| West No. Central | 46% | 50% | 42% | 63% |
| West So. Central | 90% | 90% | 30% | 52% |
| Mountain | 61% | 60% | 53% | 20% |
| Pacific | 65% | 60% | 40% | 25% |
| TOTAL | 60% | 53% | 43% | 52% |

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of America**

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New York**

BE SURE TO USE

the poster in this issue of Scholastic Coach. Write today for your free copies of booklet “Don’t be Dopey” for distribution to your students.

The Mechanics of Running

(Continued from page 14)

tion upon contact) and wind resistance. There may be slip under the pushing foot to minimize the propelling force.

The ideal is to run perfectly smooth but this is impossible. It is remarkable how smoothly the better runners do run. Inexperienced runners are jerky and use up energy to overcome needless inertia changes in the body parts.

From the start the body must be accelerated up to maximum speed. Here again part of the propelling force is utilized to overcome inertia. Once the runner attains maximum speed less force is required to maintain it.

The push is most important because from this comes the force of propulsion. The front thigh muscles help in straightening the leg but the posterior thigh muscles (the hamstrings) and the hip muscles (glutei) are the principal muscles which drive the thigh backward. Running force is directly dependent upon these and also the calf (gastrocnemius and soleus) muscles. The foot is straightened and the body rises on the toes in the push from

the ground because of the contraction of the calf muscles. When these tire the runner lets down to the flat-foot style and the stride is shortened.

Propelling force is mechanical key to speed. The body is propelled forward by the push backward against the ground. This push comes into the ground at an angle and hence some of its effectiveness is lost. Here the total applied force is resolved into its two rectangular components, the horizontal component being the effective force for propulsion. It may be noted that this is less than the total applied force.

The vertical component is waste as far as propulsion is concerned. The force of the push is due to vigorous extension of the hip, knee and ankle. It is interesting to note that the effect of raising the knees high in front is to move the center of gravity forward and thus make the angle less. The propelling force is thus made more effective by raising the knees high. Of course, this is tiring and cannot be used with success over long distances. It is one characteristic of the sprinting style.

Raising one knee forward moves the center of gravity forward approximately two centimeters; an arm forward moves it another centimeter. To aid the body angle the arms should be carried well in front of the body in sprinting.

The recovery action of the arms and legs aid in reinforcing the force of the push and also move the center of gravity forward to maintain the desired body angle. Sprinters should endeavor to drive their arms forward with vigor and also to recover their legs quickly so that they can get a high knee action.

Distance runners are faced more with conserving their energy. They are forced to recover their legs slower and move their arms less vigorously. The arms and legs resemble closely the pendulum action but with muscle force rather than gravity being the activating force. Nevertheless, the longer a pendulum the slower it will swing. Bending the knee on the recovery shortens the pendulum and permits a faster recovery of the leg. This is also economical from the point of view of endurance because the muscles are stretched after being contracted. This is why a man can run both faster and longer under maximum effort with the bent knee style than with straight legs.

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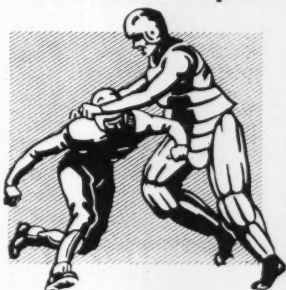


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FOOTBALL EQUIPMENT

BASKETBALL RULES CHANGES

By H. V. Porter

Secretary, National Basketball Committee

AFTER two years of thorough experimentation, pioneers of the streamlined backboard saw their dream come true when the National Basketball Committee legalized its optional use at their annual meeting in Kansas City, Mo., late in March. Instead of being rectangular and six by four feet in size, the new bank is only 54 inches wide, has curved upper and lower edges and the top is only 32 inches from the center of the hoop bracket.

Outside of this move, not a single major change was incorporated into the code. Among the minor changes was one permitting substitutions whenever the ball is dead, or the watch stopped, except after field goals. This means no running of replacements into the game when the ball is out of bounds unless time is out, too.

The Committee adopted a resolution submitted by the National Basketball Coaches Association recommending that home teams be required to wear light colored uniforms and visiting squads those of dark shades. Numbers must be from 3 upward, with ranking players wearing the lower digits.

Restrictions were placed on the exercise of the option of taking the ball out of bounds or making a free throw. The option must be exercised *before* the ball is placed at the disposal of the free thrower. Substitutions in these situations also must be made before the player steps up to the foul line with the ball.

The Committee turned down by an overwhelming vote a recommendation by the college coaches that for college play only the old "stitched seam, eight-panel, rubber valve basketball" be considered official. With all the tremendous advancements in ball construction, the Committee saw no reason for sanctioning a ball that had not even been considered satisfactory in the old days.

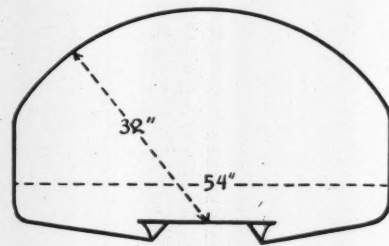
Other national groups who brought recommendations to the Committee expressed complete satisfaction with the present type ball. Of the 2,100 answers to the annual rules questionnaire, 1,800 indicated that the molded type ball is wholly satisfactory and only 300 favored the old sewed ball. Significantly, a large proportion of those who voted

for the sewed ball are located in territories where the new type ball has not been used, partly because the schools have been able to secure the old sewed ball at about half price while the dealers are clearing out their shelves.

The rule relative to what constitutes a legal ball thus remains exactly the same as for last year.

The complete changes in the code for 1940 and comments by H. V. Porter, secretary of the National Basketball Committee, follow:

Court Diagram: It will be made clear that during a free throw the player who occupies the space marked H or V is entitled to the entire space from the first alley mark to the end line.



Streamlined Backboard

Backboards (Rule 2): The smaller streamlined backboard which was outlined for experimental purposes by the Committee last year will be legal at the option of the home team. The new style board will be as outlined on page 47 of the Interscholastic Edition of the 1939-40 basketball guide. The board will contain no sharp corners or edges.

This board will be considered legal wherever the management may choose to use it. It should be understood that no organization will be compelled to make the change. It is felt that no team will be handicapped by practicing on one type board and playing on the other. The new board will have a plane surface, the same as the old. The part eliminated has been waste space for many years and, because of more recent changes in the game, has become a detriment to free use of all the playing space. It is suggested that when an organization chooses to keep its present backboards and finds that they will play some of their games on courts having the new board, the unused space on the traditional board be blocked out with a dark paint to give the target the same appearance as that of the new type board.

Ball (Rule 4): The rule relative to the size, color and reaction of a legal ball will remain exactly as it was
(Continued on page 40)



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WESTPORT, CONN.

SIX-MAN RULES CHANGES

By Stephen Epler

Stephen Epler, the father of six-man football, forwards the rules changes in the six-man code for 1940 and also some pertinent statistics on the amazing growth of the game. The National Six-Man Football Rules Committee, of which Mr. Epler is chairman, should not be confused with the legislative body that drafts the six-man rules for the National Federation.

SIX-MAN football next fall will have a complete set of rules adapted solely to the six-man game. This was the decision of the National Six-man Football Rules Committee at its Chicago meeting in March.

The Committee reported no lull in the growth of the "streamlined" game. Nearly 1,800 high schools had teams in interscholastic competition in 1939, which was about a fifty percent increase over 1938.

How does six-man compare in numbers with other sports? Of the 18,920 high schools belonging to forty-seven state athletic associations, 18,152 play basketball, 8,716 have track, and 6,838 play baseball. (Baseball's centennial celebration seemed to have an effect on both these sports. Baseball added over 500 schools while track slumped by nearly 400 over the previous year, 1938-39.)

Last year, 9,322 schools played interscholastic football, of which 1,787 played six-man and 7,535 the eleven-man game. Tennis was found in 4,684 high schools, golf in 1,580, softball in 1,609, swimming in 657, and soccer in 502.

Six-man football made its greatest gains in the Midwest—Indiana, Ohio, etc.—where it increased by more than sixty-five percent over 1938; and in the South and West, about fifty percent. In regard to total participation, the Northwest, where nearly twenty percent of all the high schools play six-man, still leads the nation, while the Northeast, with five percent, ranks lowest.

Among the states, Texas is now first with nearly 200 schools playing. Minnesota ranks second with 149, and Michigan third with 125. North Dakota and Montana which have more six-man teams than eleven-man are first in percentage participation. However, over fifty percent of all the schools in the United States have no football and it is to these that six-man can look for even more expansion.

The National Six-man Football Rules Committee, which was formed soon after six-man was started, is composed of eight men who have

been staunch supporters and pioneers of the game. The personnel of the Committee includes P. F. Neverman, secretary of the Wisconsin Interscholastic Athletic Association and a leader in the National Federation; Conrad Orr, high school principal in Montana who launched the game there; Franklin M. Reck, editor of the *American Boy*; L. F. Rice, whose efforts resulted in making North Dakota the first state to adopt six-man on a state-wide basis; W. H. Roselius, coach of Hebron College (Nebraska), who staged the first six-man game ever played; Winton Simmons, coach at Memphis, Tennessee, who pioneered the game in Arkansas and Tennessee; Professor Floyd R. Eastwood of Purdue University, whose injury studies of six-man and eleven-man football have helped make six-man a safer game; and Stephen Epler, originator of the game.

Complete code book

This Committee assembled in Chicago during March to consider the suggestions for rules changes by hundreds of coaches and to revise the code for 1940. A number of the high schools playing six-man football contributed toward the expenses of the meeting but most of the cost was defrayed by the Committee members themselves.

Coaches and players have been asking for several years for a complete set of rules for six-man which would not be mixed in with the eleven-man rules or require thumbing through two incomplete sets to find the rules needed. This year, for the first time, they will have a complete book containing everything needed for six-man with no eleven-man rules that do not apply.

The six-man code will follow the organization and wording of the eleven-man rules of the National Collegiate Athletic Association, which offered the Committee this privilege. However, the six-man rule book will be considerably shorter than the eleven-man because of the elimination of rules applying to guards and tackles, and certain line play that the abbreviated game does not have. Much of the sections on "fair catch" and "free kick" that are unnecessary in six-man was also omitted.

Many definitions have been clarified. For example, the definition of a clear pass which was difficult for

many players to understand uses the line of scrimmage as the basis for the new definition. The line of scrimmage divides the playing field into two areas and the path of a pass in regard to these two areas determines the kind of pass the offensive team can make.

A clear pass which can be thrown in any direction is any pass which starts and stops in the area behind the line of scrimmage. As before, this clear pass is required on all running plays from scrimmage.

A backward pass is one starting and ending in the other area beyond the line of scrimmage and it can be thrown in a backward direction only.

By contrast, a forward pass must start behind the line of scrimmage and end on the other side of the line.

The head linesman is in a perfect position to decide whether a pass is a legal forward or a clear pass. While a legal forward pass or clear pass can be made only by the offensive team on a scrimmage play, the backward pass, as before, can be legally made on any play including kick-offs, and any place on the field of play, providing it travels away from the opponents' goal line.

Additional changes

Other changes can be summarized as follows:

1. All players are required to wear ankle wraps or have their ankles taped.
2. Helmets must have soft exterior crowns. Shoulder pads and other pads of hard material must have soft padding of one-half inch thickness on the exterior surfaces. A number of manufacturers are now providing this safer equipment at low cost.
3. The three minutes immediately preceding the beginning and the second half of a game must be used as a warm-up period. Coaching instruction should be given before this period.
4. Intermission periods between first and second quarters and third and fourth quarters are reduced from three to two minutes.
5. Clipping anywhere on the field is abolished. The definition of clipping was broadened to include blocks by an offensive player that strike a player directly below the knee either from the side or front as well as the rear. The excessively high percentage of knee injuries in six-man football prompted this change. This rule should result in fewer injuries to the blocker as well.

6. Linemen must be within two
(Concluded on page 56)

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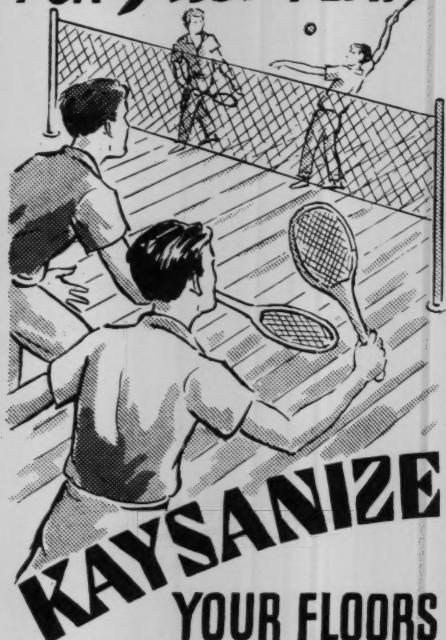
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COLOR AND THE COACH

By Kurt W. Lenser

Kurt W. Lenser, outstanding authority on six-man football and author of "Practical Six-Man Football," forwards an interesting treatise on color and the part it plays in coaching.

COLOR is a language through which we express our thoughts and ideas.

Man consciously or unconsciously is affected by his surroundings. The mysterious quality we call atmosphere is very largely a question of color adjustments, and it is a matter of immense importance whether the atmosphere with which one is surrounded is discordant and jarring or serene and restful.

Knowledge of the color sense and color in its various relationships are positively essential to the coach.

The locker room is a scene of much activity. There the boys dress and undress, listen to the coach's pep talk at the half and return to after losing a heart-breaking game. Approximately forty-five minutes of each day is spent in the locker-room. Here are sown the seeds of teamwork, responsibility and sportsmanship in the hours the boys spend together.

The locker-room expresses the individuality of the coach and the team. The color of its walls either impresses or depresses those who enter it.

The locker-room may be cheerful, gay, restful, exciting, inspirational, stimulating, warm, and vital. On the other hand, it may be cold, quiet, reserved, serious, solemn, and depressive.

Dr. A. F. Jenness, of the department of psychology at the University of Nebraska, offers the following on the psychology of color and the locker-room:

"I should answer your question about the color of the walls of the locker-room by recommending a light cream color, more yellow than brown. This is better than white because it does not reflect so much glare and it does not show dirt so readily.

"It may interest you to know that when very depressed patients enter the state hospital at Lincoln (Neb.) they are put in a room where the walls and furniture are all painted a brilliant yellow. This seems to cheer them up considerably and bring them out of their depression. While I am not hinting that athletes are comparable to patients in the state of manic-depressive insanity, I do believe that this evidence of the effectiveness of bright yellow

should be given consideration in solving a problem such as you present.

"You have probably noticed that it is a good idea to have pictures of former teams in the locker-room as well as in other places where the students will see them. This helps the boys feel that they are not merely a few individuals playing for their own benefit, but that they are representing a school which has a past as well as a present and a future.

"As for the color scheme on the posters and placards to be hung on the walls, red is probably the best. Perhaps it would be a good idea to use school colors wherever possible. But, personally, I think the use of posters can be greatly overdone. They sometimes *overstimulate* the boys to the point where they do not play so well."

What are you as a coach doing about your locker-room? Are you using color to advantage in building up the morale of the squad and establishing the right kind of success pattern in the minds of the boys? Are you making use of color in your publicity? Are you offering color to the public at your games?

Do you have a scoreboard, yard-line markers, a band, and cheer leaders attired in colorful uniforms? Do you offer entertainment—pep-club drills, marching bands, etc., during the intermission at the half? Or do you permit the crowd to run wild on the field, so that by the time the teams come out for the last half the lines on the field are completely obliterated?

Color moods

Here are some facts* about the various colors:

Red is an exciting, stimulating, warm, vital color; the symbol of action and courage. An over-supply of red, however, might be irritating to a person of super-sensitive temperament.

Orange is a color that suggests hospitality; perhaps the most attractive and far-reaching of all the colors. It does not excite or stimulate like red.

Yellow is the most luminous color. It has a cheerful, buoyant personality. Mixed with red, it makes orange.

Green, a combination of yellow

*Bonnie E. Snow and Hugo B. Froelich, *The Theory and Practice of Color*, with permission of the American Crayon Co.

and blue, is cool and restful to the nerves and eyes. It is lighter and more cheerful than blue, and has more dignity and repose than yellow.

Blue is calm and sedate; it is cold, quiet and reserved; and modest and retiring, full of quietness and restraint.

Light tones of color cheer and enliven; dark tones depress and weigh down. Black and white create the greatest possible color contrast.

The circus, cigarette advertisements, and patriotic posters all make use of color. The football poster or placard with its brilliant color accomplishes quickly what the spoken, written or printed message would utterly fail to do.

Football uniforms should also have a touch of color to catch the eye.

Football camouflage

White colored jerseys make a team look big; dark jerseys make them look small. A few seasons ago the writer scouted a team that his own team was to meet a week later in an important intersectional clash. This team was clad in white jerseys. In his scouting notes he made the following connotations regarding the weight of the line being scouted: left end, 185 lbs.; center, 195 lbs.; right end, 180 lbs.

The writer went home with fear and trembling in his heart in anticipation of the terrific battering his puny 150-pounders were going to take in the impending game. The game was played, and in conversation with the rival coach following the game it was discovered that the weights of the three opposing linemen were as follows: left end, 165 lbs.; center, 180 lbs.; and right end, 118 lbs.

There are numerous other opportunities for making the right sort of impression with the spectators.


A scoreboard with black numbers on a white background adds color to the game.

Bands attired in appealing uniforms marching at the half go hand in hand with a football game.


Different colored placards should be used to convey different moods to the boys. There are times when the boys need stimulation and times when a bad dose of over-confidence needs to be dealt with.

The coach can establish moods among the boys by the color of his necktie, suit, shirt, and hat.

Football is a business. To the coach it means bread and butter. As a business man, it is his duty to study color and employ it to his advantage.





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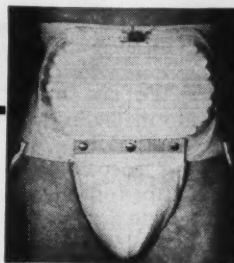
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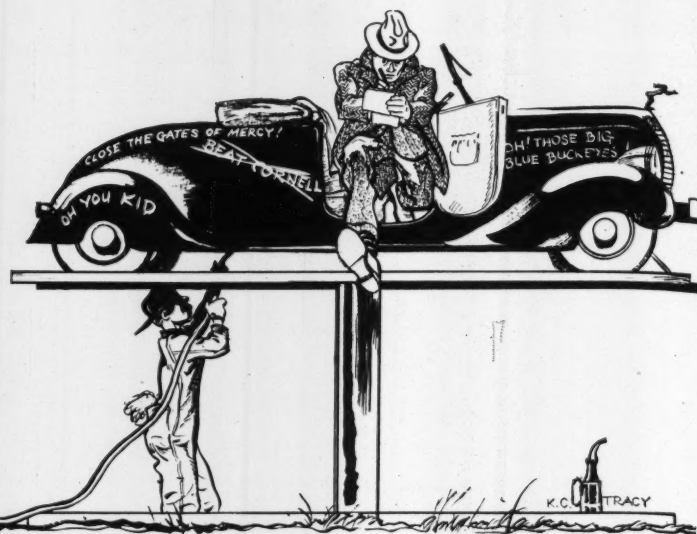


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Coaches' Corner



If you have something for this column send it to Bill Wood, Evanston Township High School, Evanston, Illinois.

Francis Schmidt, the Ohio State football coach, is one of the greatest concentrators in the business. He recently drove his car into a filling station and instructed the attendant to grease it. He sat in the car working out plays in his notebook for 15 minutes, then opened the door and stepped out. The difficulty was that the car was on an elevator and raised six feet. P.S. He survived.

The best crack of the month comes from an Associated Press man who writes about the Detroit Tigers. "Frankly," he says, "the infield to date has been nothing but a strainer for balls going to the outfield."

On the subject of the much maligned Detroit infield, Dan Parker, famous sports writer, reports that one member of the Tiger inner defense is known as the Ancient Mariner. He stoppeth one of three.

Blue Foster of Newport, Ky., High School passes along a remark he heard one of the veteran coaches make during the late stages of the state basketball tournament. "Fellows, I am going back home and get me two or three big boys and a couple of rabbits, and we are going to dribble, shoot and rebound from now on. No more of this scientific stuff!"

In the recent Perry (Kan.) relays, writes E. A. Thomas, commissioner of the state high school activities association, one of the contestants won his heat in the 100-yard dash, then hopped into his car and drove 20 miles to Lawrence where he helped his high school band win honors. He then got back to Perry in time to place in the finals of the 100.

Before attending the University of Iowa, Ken Reid, White Sox rookie southpaw, pitched six no-hit games in his last year at Rose Hill, Iowa, High.

Here's the perfect basketball play as created by Coach Byron Bozarth whose Granite City warriors copped the 1940 Illinois state championship at Urbana recently.

"Line up your center under the basket and station a forward on each side of him. Put the two guards beyond the free-throw circle. One guard has the ball. He shoots. The ball goes through the hoop. That's perfect."

Few people would have the courage to turn down a quarter of a million dollars if it were offered to them. But that's what Arch Ward, veteran sports editor of the *Chicago Tribune*, did when he was asked to become president of the National Professional Football League this spring for ten years at \$25,000 per annum. It must be true that once a newspaper man always one.

Get out the parachutes! The pole vaulting ceiling is now fifteen feet. Cornelius Warmerdam of the San Francisco Olympic Club recently cleared that height in a triangular meet including Washington State College and the University of California. The recognized world's record, 14 ft. 11 in., is held jointly by Earle Meadows and Bill Sefton, both graduates of the University of Southern California. It's the California air that does it. At any rate a fifteen-foot vault is quite an act of levitation. Imagine the comedown from that altitude!

We see by the papers that Dartmouth is now going to meet Vassar—officially. The contest is to be a sailing race between the Vassar Yacht Club and the Dartmouth Yacht Club scheduled for Poughkeepsie on May 11.

Since the University of Chicago abandoned collegiate football, President Hutchins has been the target for innumerable jibes. So far the crusading chieftain has demonstrated a rare ability to give as well as to receive. When Harvard's athletic director, Bill

Bingham, referred to him as having the physique of a Sir Galahad, Hutchins breezed over a fast one that retired the opposition with no hits, no runs and one error.

"Sir Galahad was not particularly notable for his physique. His strength was as the strength of ten because his heart was pure."

Who said that the classics had no practical value?

Congratulations to Mark Almli, new president of the Wisconsin High School Coaches' Association. One of the most versatile of all the great athletic stars produced in the Northwest, Almli has had phenomenal success as a coach both at Ironwood, Mich., in the heart of the battle-scarred Iron Country, and at Eau Claire, Wisconsin.

When the University of Illinois needs a basketball captain, it looks over the squad to see if anyone there hails from Cicero, Ill. Bill Hapac and Johnny Drish are both graduates of the Chicago suburb's J. Sterling Morton High School where Norman Zeibell is the head basketball coach. Hapac, the retiring captain, set so many scoring records this season for the Illini that there is some talk of rededicating the gym in his honor.

The Illinois College Blueboys, the "tankless wonders," for the first time in the last six years do not hold the swimming championship of the Illinois College Conference. For some reason or other the Blueboys did not enter this year's meet which was won by North Central. Bradley nosed out Knox for second place.

Spring is here and again Babe Ruth is in the news. His hole-in-one on the 220-yard fifteenth hole of the St. Albans golf course indicates that the "Monarch of Swat" is still in there swinging. But we had rather see him clout one over the fence again than watch him ace every hole on the St. Albans or any other course.

To a superstitious coach could there be anything worse than to have a star player walk under a ladder on the way to an important game? It happened to Jack Vance, popular member of the Northwestern staff, while he was coaching at Hibbing, Minn. On the way to the field to play Coleraine, big, lumbering Dave Cameron, who later became a star guard at the University of Chicago when Stagg-coached teams were a power to be reckoned with, not only jogged unconcernedly under a ladder, but managed to catch his foot in a rope and bring down ladder, scaffold, painter, and paint bucket.

Coach Vance was in agony. With an omen like that what chance did Hibbing have of winning the game? Not one in ten thousand. He made that clear by repetition. By game time Cameron was convinced that the cause was lost, hopelessly lost. So was the rest of the team, but the game had been scheduled and they had to go through with it. Final score: Hibbing 102, Coleraine 2.

Credit this one to Coach Frank Colucci of the McKinley School in Flint, Mich.

A young, inexperienced official was hired to work a preliminary game alone. After the first half ended in a very close score and the rival coaches realized that the game was going to be difficult to handle, school authorities decided to ask the older official scheduled for the varsity game to help out on the second half of the preliminary. After the officials had been introduced, the beginner made polite but pointed inquiry:

"What team do you want to call fouls on?"

"Fouls are to be called on both teams by either of us who happens to see them," replied the older official, somewhat startled.

The youngster was firm: "I've never worked a game like that. You take the red shirted team and I'll take the blue. We'll see more fouls that way."

The Oklahoma Aggies haven't lost a basketball game on their home court in the past four years. The wrestling teams representing the same school have won the N.C.A.A. mat title eleven times during the last thirteen years.

And if you are looking for a record to go after just set your sights on that of the Harlem Globe Trotters who subdued the Chicago Bruins, 31-29, last month to clinch the world's professional basketball title. In fifteen years of competition the Negro lads have scored 1,714 victories in 1,842 starts.

The no-hit season is with us once more. Harvard was the first victim reported. Three Duke hurlers, working three innings each, let down the New Englanders without a bingle. The score: Harvard 0, Duke 14.

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Our Free Record Book "How To Make Stars" contains helpful charts for easy record keeping of players' faults as they occur. Free on request to any coach.



VESTAL CHEMICAL LABORATORIES, INC.
ST. LOUIS NEW YORK

Basketball Rules

(Continued from page 32)

last year. The questionnaire which was nationally circulated indicates an overwhelming satisfaction with the present ball situation. Any difference in opinion relative to which of the various types of official balls is most satisfactory is a healthy condition which will result in continued improvement of equipment and ultimate use of the best.

Because of various alleged difficulties during the transition from the sewed type ball to the molded type ball, an expression of sentiment was requested in the annual questionnaire. The results indicated an overwhelming satisfaction with the molded type ball: 1852 expressed entire satisfaction with the molded ball and 345 preferred the sewed ball.

Substitution (Rule 5-3): Several minor changes were made in connection with the proper time and method for making substitutions. A substitution will be permitted any time the watch is not running except during the interval between the time the ball is placed at the disposal of a free thrower and the time the free throw is successful or unsuccessful. It will also be permitted any time the ball is dead with the watch running except after a field goal.

Numbers (Rule 5-6): It is strongly recommended that players be numbered consecutively beginning with the number 3 and that ranking players wear the lower numbers. It will also be prescribed that wherever possible, the home team wear suits of a light color and the visitors suits of a dark color.

Timing and Scoring (Rule 6-2, 11 and 12): Slight changes have been made in the rules dealing with timing and scoring in order to eliminate some of the irregularities which have been common in connection with these important matters. Comments by the Games Administration Committee will emphasize a trend toward the use of a checker or supervisor who will be primarily responsible for these matters and who will be assisted by one Official Timer and one Official Scorer.

Playing Terms (Rule 7): Several changes in wording and arrangement will be made in an attempt to modernize this rule. The Editors are authorized to provide for consistent rules relative to cases where the ball touches or is touched by a player who is on or outside a boundary line. An attempt will be made to place the responsibility for causing the ball to go out of bounds on the player who is himself out of bounds before touching the ball.

Playing Regulations (Rule 8-1): In high school or junior high school games, an automatic time-out is to be declared in the middle of the second and fourth quarters, provided



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August 12-15

BASKETBALL AND FOOTBALL

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Directors: Maurice M. Guy and
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Davis Mt. Coaching School

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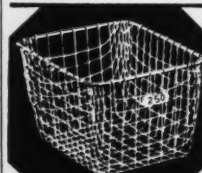
FOOTBALL: Frank Leahy, Boston College,
and Jess Neely, Rice, assisted by Jake
Wilson.

SIX-MAN FOOTBALL: Buster Brannon,
Rice.

TRACK: Tonto Coleman, Abilene Chris-
tian College.

For further information, write

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neither team has taken a charged time-out during the first four minutes of these quarters. This official's time-out is to be of two minutes duration.

Tie-Score (Rule 9-3): When a high school game ends in a tie, one over-time period of three minutes duration will always be played. Thereafter the sudden death method of breaking a tie will be used.

Forfeit (Rule 9-4 and 5): When a game is forfeited, the score at the time of forfeiture will be considered the official score in cases where it would be to the disadvantage of the offended team to have the score declared 2-0.

Out of Bounds (Rule 10-1—Note to Officials): When the ball is awarded to a team out of bounds from its front court, the Official must have actual possession of the ball and then hand it to the proper player.

Free Throw (Rule 13-1 and 2): These sections will be brought up to date and a definite procedure prescribed for the Official when a foul is called. Also the rule relative to who shall make the free throw will be made consistent in cases where an injured player is to leave the game, or a player is illegally in the game, or a player is disqualified on the play. In such cases, the substitute will be expected to attempt the free throw.

Violations and Penalties (Rule 14-2): If a free thrower who is attempting a throw for a technical foul steps over the line too soon, the point shall not be counted. Whether the throw is successful or not the ball will be awarded to the free thrower's team out of bounds at mid-court.

Rule 14-11: This section will be rewritten to include the provision relative to the use of the restraining circles during jumps. The interpretation of the rule will be to the effect that a player may not jump through the cylinder above the circle before the ball has been tapped by a jumper.

Fouls and Penalties (Rule 15-12): In penalty (a) a new question and answer or an addition to the Rule Comments will give more specific information as to what constitutes a "foul from behind."

In penalty (b) the provision for the extra free throw for a deliberate foul will be further emphasized.

In penalty (d) the offended team is given the right to waive a free throw only before the ball has been placed at the disposal of the free thrower. A definite procedure will be outlined for the referee's duties relative to this matter.

Comments: The comments will include the recommendation of the National Basketball Coaches Association that no conference adopt rules which deviate from the official rules except in cases where such modifications are authorized by the national committee for experimental purposes. Also a 98-foot court for college play will be

(Concluded on page 43)

ST. LAWRENCE UNIVERSITY COACHING SCHOOL

under

Carl G. Snavely

Head Football Coach
Cornell's Championship Team

Frank J. Kavanagh

Trainer of Cornell's Athletic Teams
Former U. S. Olympics Trainer

and

George E. James, Assistant Football Coach, Cornell Univ.

Ronald T. Burkman, Basketball Coach, St. Lawrence Univ.

JUNE 24th
to
JUNE 29th
at
Canton, N. Y.

Presenting an intensive 6 DAY COURSE emphasizing the FIVE-MAN LINE, SHIFTING DEFENSES, SINGLE WING SPINNER OFFENSE, FORWARD PASSES, and other modern trends in football coaching and strategy, and the later developments in training and conditioning as well as care and treatment of injuries. DEMONSTRATIONS—MOTION PICTURES—INDIVIDUAL PROBLEMS—Field demonstrations by two high school teams. A special feature will be lectures by Coach James, using for the first time the most comprehensive set of motion pictures ever assembled to demonstrate the execution of thirty fundamental phases of football under game conditions. Lectures and demonstrations in basketball, by R. T. Burkman, highly successful coach, will feature the most modern techniques.

Enjoy six days crammed full of instruction and recreation in the beautiful foothills of the Adirondacks. Fishing, golf, tennis and all outdoor recreations. Tuition \$15.00. Board and Room in modern and attractive men's residence, \$2.50 per day.

For full information write

ROY B. CLOGSTON, Director, BREWER FIELD HOUSE, CANTON, N. Y.

West Virginia University

1940

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AUGUST 5-10

The Nation's Leading
Coaches and a Complete
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TOTAL TUITION \$10.00

Fine living accommodations. Undergraduate credit. Demonstrations in detail. Mimeographed copies of all course material.



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REQUEST FOR FURTHER INFORMATION

To Alden W. Thompson, Dean, School of Physical Education and Athletics
WEST VIRGINIA UNIVERSITY, Morgantown, W. Va.

Please send complete information about the 1940 Coaching School to

SIGNATURE..... ADDRESS.....



ATTEND A COACHING SCHOOL THIS SUMMER

1 COLORADO H. S. COACHES' ASSN.—Denver, Colo. Aug. 19-24. L. H. Mahony, director. Staff: 'Ox' DaGrosa, "Cac" Hubbard, Harry Hughes, Dick Romney, Dr. Foster Matchett, Harold Long. Tuition, \$10. For further details see advertisement in April issue.

2 DAVIS MOUNTAIN—Fort Davis, Tex. July 22-27. John C. Prude, director. Football: Frank Leahy, Jess Neely, Jake Wilson; Six-Man Football: Buster Brannon; Track: Tom to Coleman. For further details see advertisement on page 40.

3 DAYTONA BEACH—Daytona Beach, Fla. Aug. 19-24. G. R. Trogdon, director. Football: Frank Leahy, Lowell Dawson, Robert Dodd; Basketball: A. F. Rupp. Tuition, \$15. For further details see advertisement on opposite page.

4 DUKE UNIVERSITY—Durham, N. C. July 29-Aug. 3. Wallace Wade, director. Courses by Varsity Coaching Staff. Tuition, \$10. For further details see advertisement on opposite page.

5 EASTERN BASKETBALL—Brooklyn, N. Y. Aug. 19-24. Clair Bee, director. Staff: Paul Mooney, Pat Kennedy, Ed Kelleher, Red Smith, Buck Freeman, others. Tuition, \$10. For further details see advertisement on page 45.

6 INDIANA BASKETBALL—Logansport, Ind. Aug. 19-23. Cliff Wells, director. Staff: Piggy Lambert, Lou Birkett, E. N. Case. For further details see advertisement on page 44.

7 MID-WEST COACHING SCHOOL—Saginaw, Mich. Aug. 12-15. Maurice M. Guy, director. Staff: Clair Bee, Kurt Lenser, others. Tuition, \$10. For further details see advertisement on page 40.

8 NAMPA COACHING SCHOOL—Sun Valley, Ida. Aug. 19-23. Harold A. White, director. Football: A. L. "Lon" Stiner; Basketball: A. T. "Slats" Gill. Tuition, \$10. For further details see advertisement on page 44.

9 NORTH CAROLINA UNIVERSITY—Chapel Hill, N. C. Aug. 19-31. R. A. Fetzer, director. Courses by Varsity Coaching Staff. Tuition, \$10. For further details see advertisement on page 44.

10 NORTHWESTERN UNIVERSITY—Evanston, Ill. Aug. 19-31. K. L. Wilson, director. Football: Eddie Anderson, Lynn Waldorf, Burt Ingwersen, Wes Fry; Basketball: Piggy Lambert, Dutch Lonborg. For further details see advertisement on page 45.

11 PENN STATE COLLEGE—State College, Pa. Inter-Session, June 11-28; Main Session, July 1-Aug. 9; Post-Session, Aug. 12-30. P. C. Weaver, director. Health Education, Recreation, Physical Education, Athletics. For further details see advertisement on page 44.

12 RUSHMORE COACHING SCHOOL—Rapid City, S. D. June 3-8. H. A. Sullivan, director. Football: Frank Leahy; Basketball: Dave McMillan, Bunny Levitt; Training: H. B. Goodell; Six-Man Football: H. A. Sullivan. Tuition, \$15. For further details see advertisement on page 45.

13 ST. LAWRENCE UNIVERSITY—Canton, N. Y. June 24-29. Roy B. Clogston, director. Football: Carl Snively, George E. James; Training: Frank J. Kavanagh; Basketball: Ronald T. Burkman. Tuition, \$15. For further details see advertisement on page 41.

14 ST. MARY'S UNIVERSITY—San Antonio, Tex. July 29-Aug. 3. J. C. Simms, director. Football: Carl Snively, Matty Bell, Jess Neely, Fred Thomsen. Tuition, \$10. For further details see advertisement on page 46.

15 UTAH STATE AGRIC. COLLEGE—Logan, Utah. June 10-14. E. L. Dick Romney, director. Football: Carl Snively; Basketball: Howard Hobson. Tuition, \$10. For further details see advertisement in April issue.

16 WEST VIRGINIA UNIVERSITY—Morgantown, W. Va. Aug. 5-10. Alden W. Thompson, director. Football: Jim Crowley, Dick Harlow, Bill Kern; Basketball: Clair Bee, Dyke Raese. Tuition, \$10. For further details see advertisement on page 41.

Basketball Rules

(Continued from page 41)

legalized in those cases where it is impractical for the local management to use the four-foot end line without making the court longer than the previously authorized 94 feet.

The summer coaching school edition of the basketball rules will be published, as in the past, by the National Federation and will be available for Teacher Colleges and summer coaching schools during the summer months. These may be secured in dozen lots direct from the National Federation office, 11 South LaSalle Street, Chicago, Ill.

The wording of this special edition will be the same as that of the almanac edition of the guide which will be published at a later date.

The following officers were elected for 1940-41: chairman, Floyd Rowe, Cleveland; vice-chairman, Forrest C. Allen, Lawrence, Kan.; secretary, H. V. Porter, Chicago; treasurer, H. Jamison Swarts, Philadelphia; and editor of the Guide, Oswald Tower.

New Book

ADVANCED TENNIS. By Chester Bowers. Pp. 124. Illustrated—photographs. New York: The Macmillan Co. \$1.75.

MR. BOWERS earns his letter as a knight of the quill right off the bat, when he admits, in an introductory chapter of his new book, that he will make no attempt to cover completely the subject of tennis.

From his reading experience he has found that too many other men have done just that; and that most of the current instruction books are adequate for purposes of teaching fundamentals. Rather than do something that had already been done many times before, he tackled the job from another angle.

The one weakness of practically all tennis books, he believes, is that they are not comprehensive enough in their advise on strategy and in their presentation of helpful ideas. With this as a premise, he sets out to treat in greater detail several matters of techniques which have not been sufficiently explained in the available books on the game, and to present many useful ideas drawn from his many years of competitive playing, analytical watchfulness and coaching.

His handbook includes chapters on strategy, sequence plays (how to plan your game), the relative values of the various grips, analysis of strokes, and footwork and timing. Out of his experience with amateurs, he has devised many effective aids and corrective exercises which will prove helpful to coaches and players. He includes exercises for tournament training, differences in playing surfaces, equipment and its care, and the pedagogy of tennis.

• Second Annual •

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DAYTONA BEACH, FLORIDA

• "The Outstanding Coaching School in the South"

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Boston College

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Notre Dame with variations
Line Play

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Orange Bowl Winners
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FOOTBALL ★ BASKETBALL ★ TRACK

Fee: Ten dollars (\$10.00)

WALLACE WADE, Director

Durham, North Carolina

NORTH CAROLINA UNIVERSITY COACHING SCHOOL

August 19—August 31, 1940

The courses to be offered in the University of North Carolina's 19th annual coaching school include football, basketball, baseball, track and field, boxing, wrestling, and training and conditioning.

The school will be conducted under the direction of Robert A. Fetzer, director of athletics at the University of North Carolina. Instruction will be given by the members of the coaching staff of the University.

The staff of instruction will include: Director Fetzer, Raymond Wolf, John Vaught, W. F. Lange, P. H. Quinlan, Bunn Hearn, M. Z. Ronman, M. D. Ranson, John Morriss, J. M. Tatum, and C. P. Erickson.

The registration fee of ten dollars will cover tuition for all courses and dormitory room rent. No additional charge will be made for rooming accommodations for coaches' wives.

For illustrated announcement, address

Secretary E. R. RANKIN
CHAPEL HILL, N. C.



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STATE COLLEGE

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June 11 to June 28

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DIRECTOR OF SUMMER SESSIONS
Room 237, Education Building

**THE PENNSYLVANIA STATE
COLLEGE**

State College, Pennsylvania

FROM THE STATES

This department includes correspondence from state high school coaches, associations and state high school athletic associations. All associations are invited to participate.

West Virginia

Two-class hoop talk

FOR the fifth time in the last 13 years, Wheeling High School captured the state basketball championship. All previous tourney attendance records were smashed when 10,942 paid admissions were recorded for the four sessions, held over a three-day period.

Talk about establishing Class A and Class B championships in basketball is again rife. While the small schools do not wish to compete against the larger schools, it is pointed out that West Virginia has a comparatively small state association membership of approximately 210 schools. It is the opinion of veteran school men that this small membership does not justify the organization of two championships, in basketball or in any other sport.

The state schoolboy coaches, meeting at Morgantown during the finals, paved the way for the probable adoption by the High School Athletic Association of the National Federation football rules. This move has been advocated for the past four years, but the demand for the change in codes was not wide-spread among the 160 schools supporting football.

The state association has made every effort to keep abreast of the National Federation athletic rules, which are designed expressly for schoolboys. In line with this action, the state has abolished the javelin throw from this year's sectional and state final track meets.

The state finals in track will be contested at Morgantown on May 11, during morning and afternoon sessions. It was first reported that all events would be crowded into one afternoon.

MAURICE LANDERS,
Washington, D. C.

Kansas

Track championships

THE spring sports program for state high schools includes track and field, baseball, tennis, and golf. Approximately 450 high schools feature track and field sports and 300 go in for baseball. No state championship is awarded in baseball but a number of leagues play round-robin schedules and other schools participate in invitation tournaments.

The state track and field championships and tennis and golf tournaments will be staged at Emporia State College on May 17 and 18. Regional track meets and tennis tournaments, in which the athletes qualify for the

INDIANA BASKETBALL COACHING SCHOOL

AUG. 19-23, 1940

WARD (Piggy) LAMBERT
Purdue University
Western Conference Champions

LOU BIRKETT
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Champions

E. N. CASE
Coach of Four Indiana High
School Champions

Special emphasis will be placed on methods of penetrating the different types of zone defense.

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LOGANSPOUT INDIANA
"The Heart of Hoosier Hysteria"

THIRD ANNUAL NAMPA COACHING SCHOOL

At Sun Valley, Idaho

August 19th to 23rd, Incl.

FOOTBALL

A. L. "LON" STINER

Oregon State

(Lost only to U. S. C. — National
Champions)

BASKETBALL

A. T. "SLATS" GILL

Oregon State

(Won Northwest Championship)

TUITION \$10.00

Meals and Lodging—Sun Valley Chalets
\$15.75 for Coaching School Duration

Learn and Vacation at Sun Valley
AMERICA'S GREATEST PLAYGROUND

For information write

HAROLD A. WHITE
NAMPA HIGH SCHOOL
NAMPA IDAHO

state finals, will be held the week before. Boys qualify for the regionals in approved preliminary meets and only those who place in the preliminary events can enter the regionals.

A boy may not run in more than one race per day of 440 yards or longer, whether as a lap in a relay or an open event. All are restricted to three individual events and one relay or two individual events and two relays. These limitations have tended to increase the number of boys participating in track. With three relay events—the 880, mile and medley—opportunity for participation is provided for a large number of youngsters.

The new overtime rule for high school basketball should prove popular in Kansas. The final game in the state Class A championships between Winfield and Wyandotte of Kansas City ended in a tie and Winfield won in the play-off without a Wyandotte player touching the ball.

For a number of years we had a tournament rule of one three-minute overtime period and then "sudden death" if more time were needed. This was abandoned when the national rules committee introduced the sudden-death rule. The adoption of the former Kansas tournament rule should hence receive a favorable reception in the state of its birth.

E. A. THOMAS,
High School Activities Assn.,
Topeka, Kan.

Arizona

Wildkats claw Badgers

DUNCAN'S Wildkats, scoring the tying and winning field goals in the last 30 seconds of play, defeated Tucson, 31-29, to gain the state high school basketball title for the third successive year.

Paced by senior Gene O'Dell, who shot the winning basket in the final moments of play, the victors led a field of 16 teams through the best show in the history of the yearly gatherings. Ten games were decided by three points or less, three of which were decided by a single point.

Both Duncan and Tucson entered the final game with sparkling seasonal records. The champions lost three games during the regular campaign, while the Tucson Badgers, after a shaky start, annexed 11 consecutive victories.

Morenci, a team that had beaten Duncan twice during the regular season, and St. Johns, consolation victors, were the only two teams to enter the tourney with unblemished slates. Morenci lost a 26-24 battle to the champions in the semi-finals, while St. Johns was upset in the first round by Wickenburg.

Scoring in the tournament hit a new high, with 13 teams sinking 40 points or more in the 22 games. Scores in the consolation games, as usual, were higher than those in the championship brackets.

COMBINE BUSINESS WITH PLEASURE AT THE

Second Annual EASTERN BASKETBALL CLINIC

MANHATTAN BEACH—BROOKLYN, N. Y.

August 19-24

CLAIR BEE, L. I. U.—Director
GEORGE KEOGAN—Notre Dame
H. C. "RED" CARLSON—Pittsburgh
ED. KELLEHER—Fordham

PAT KENNEDY—E. I. A. Official
CHARLES "CHICK" DAVIES—Duquesne
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Long Island U. players will demonstrate. Special attention to the High School Coach and his problems.

Free of charge: Basketball, movies and forum nightly at 8 . . . Admission to any of the many beaches and pools at Manhattan Beach for you and your family, day or night . . . Scores of tennis courts, handball courts, basketball courts, etc., for your pleasure . . . Ample mimeographed material covering every lecture . . . A copy of Clair Bee's Basketball Book . . . Admission to finals of Metropolitan A.A.U. Outdoor Basketball Tournament . . . Admission to Casino where famous name dance bands play nightly . . . Free parking for car, day or night.

All Eastern Basketball Clinic coaches will receive invitations to attend the Herald Tribune's Football Clinic, August 26-30.

TUITION—\$10

"Can You Take It?"

Ask those who attended last year

Rooms \$3—\$6 per week.

Special Basketball Clinic meals at Beach

Total cost for tuition, room and meals—\$21-\$25

For information write

CLAIR BEE, LONG ISLAND UNIVERSITY
300 PEARL ST. BROOKLYN, N. Y.

FIRST ANNUAL

RUSHMORE COACHING SCHOOL

IN BLACK HILLS OF SOUTH DAKOTA

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FRANK LEAHY
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SIX-MAN FOOTBALL ROUND-TABLE

H. A. Sullivan—Coach, S. Dak. Mines

Leahy and McMillan are two of the outstanding coaches in their respective fields. More than this, they are two coaches that can put across their ideas from the lecture platform.

People travel from both Coasts just to see the beautiful Black Hills, the Switzerland of America. Such scenic wonders as Mt. Rushmore Memorial, Dinosaur Park, Geological Museum, Historical Deadwood, Homestake Gold Mine, Bad Lands, Custer Stockade, with Trout Fishing, Golfing or what have you. Play while you learn in the Real Land of Vacations.

June 3-8—Tuition \$15

For further particulars write

H. B. GOODELL or H. A. SULLIVAN
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August 19-31

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Sixty All-Americans of 1939 will practice daily for game, Aug. 29, with Green Bay Packers. Unequalled opportunity to watch nation's leading coaches prepare team for a game.

For Further Information Write

K. L. WILSON, Athletic Dir.

Northwestern University
Evanston, Ill.

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Distinctive—Dignified—Hand finished—Consistent fast colors—Top grade quality yarns—Superior craftsmanship—Hydro-toned—Lasting wear—Give your boys O'SHEA AWARD SWEATERS and win their everlasting gratitude.

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Please send me my free copy of "Stroking with Vincent Richards."

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An unparalleled opportunity to study the game under America's Ace Coaches. Every phase of Offensive and Defensive Football; Demonstrations; Motion Pictures; Individual Instruction; Problems.

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TUITION, \$10
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Don't miss this opportunity to obtain a sound course in coaching, in the Southwest's first "Air-Conditioned Coaching School."

For full information, write
J. C. SIMMS, Director
ST. MARY'S UNIVERSITY
SAN ANTONIO, TEX.

"Where Life Is Different"

Duncan's feat of winning the title three straight years was the first time this had been accomplished since Mesa strung together four successive crowns from 1923 to 1926 inclusive.

DON PHILLIPS,
Tucson, Ariz.

Illinois

Spring roundup

HIGH school teams in the state are now busily engaged in a wide variety of spring activities. In addition to tennis, track and golf meets, there will be a series of sectional baseball tournaments. The finals will be played at Peoria and the winner will be considered the baseball champion of central Illinois. It is not planned to make this a state-wide series and no state championship is anticipated.

The state final golf meet will be held at the Mt. Hawley Country Club at Peoria on May 10 and 11 and the finals in track and tennis at the University of Illinois a week later.

The javelin throw has been eliminated from all state-sponsored track meets. Since no event has been substituted for it, the number of events will be reduced from the customary 14 to 13.

Coach S. O. Storby of Proviso High School, Maywood, and Coach Eugene DeLacey of Dundee High School have been cooperating with the Basketball Educational Bureau in the production of a basketball film entitled "Precision Basketball."

The film will be ready for showing after June 1 and will be available to high schools and colleges. The matters pertaining to the proper rulings on the various illustrated play situations were supervised by Oswald Tower, editor of the Guide, and H. V. Porter, secretary of the National Basketball Committee. The film is being produced by the Atlas Educational Film Company, Oak Park, Ill. Further information may be secured by writing the Basketball Educational Bureau, 209 South State St., Chicago, Ill.

H. V. PORTER,
High School Athletic Assn.,
Chicago, Ill.

Wisconsin

Coaches clinic

THE High School Coaches Association had a fine turnout for its annual spring clinic in Madison. Close to 200 coaches were on hand to listen to a well-rounded instructive program on spring sports.

The program consisted of a talk and class demonstration on golf by George Vitense, an interesting lecture by Tom Jones on how to train hurdlers, pole vaulters and long-distance runners and a baseball course by Art Mansfield.

Several famous University of Wisconsin track men demonstrated their specialties. Ed Smith, Big Ten Con-

ference indoor champion, showed how to take the hurdles. Milt Padway warmed up on 12 ft. 6 in. and then spoke on how a pole vaulter practices for his event. Chuck Fenske, greatest miler of the day, and Walter Mehl, distance star, demonstrated correct running technique, emphasizing shoulder girdle fixation.

Coach Mansfield then had a number of his boys show the coaches how to trap men between bases, slide into bases and keep runners anchored to the bags.

The following officers were elected for the coming year: Mark Almli, Eau Claire, president; Milo Willson, Baraboo, vice-president; and L. A. Erickson, Shorewood, secretary-treasurer.

L. A. ERICKSON,
High School Coaches Assn.,
Shorewood, Wis.

New Jersey

Soccer, the American way

SCHOLASTIC soccer in the Garden State is definitely gaining in popularity and each year additional schools are making it a part of their athletic program.

Probably one of the main factors for this growth is the fact that coaches are trying to Americanize the game and to adapt it to the American boy. There is no reason why certain desirable changes in the rules and regulations cannot be made. For example, in central and south Jersey the teams are playing four fifteen-minute quarters and allowing substitutions. Both of these things are desirable but certainly are not in accord with the rules "over there."

Another excellent innovation is the use of two referees instead of one. These two cover the field in a manner similar to basketball's two-man officiating system. A soccer game is definitely too much for one man to work. Two can do a fine job.

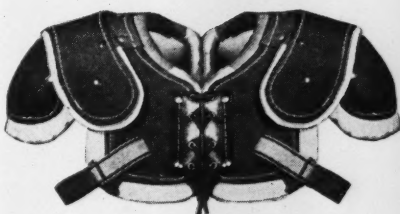
The secondary school soccer coaches met in conference on April 5 at Asbury Park in connection with the annual coaches clinic sponsored by the state's interscholastic activities association. In the near future the soccer coaches intend to form a permanent state-wide association.

Immediately following the organization of the coaches' association, a clinic will be held in some centrally located spot, possibly at Rutgers University, New Brunswick. This will give the coaches an opportunity to see some of the soccer techniques demonstrated.

At the Asbury Park meeting, D. Hugh McDonald, secretary of the State Soccer Football Association, urged the coaches to continue to Americanize the game and to continue to teach high standards of sportsmanship. He also stated that he could make it possible for coaches and their players to witness professional and league games as guests of the various clubs.

C. EDWARD CHRISTIAN,
Trenton, N. J.

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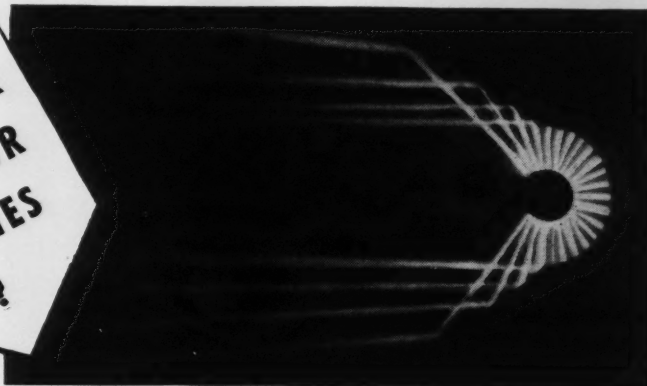
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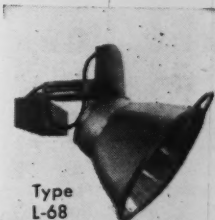
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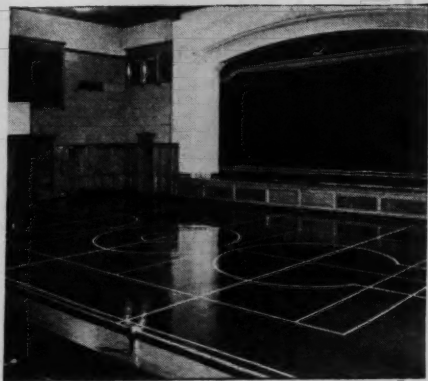
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SCHOOLBOY TRACK TRENDS

By E. A. Thomas

E. A. Thomas, commissioner of the Kansas State High School Activities Association, and National Federation representative on the Track and Field Rules Committee, reports on the recent developments in high school track and field athletics.

NEVER has there been such interest in high school track and field athletics as there is at the present time. New tracks and stadia, better coaching and improved methods of staging meets have all played a part in luring thousands of boys to the cinders and pits of the sport.

Where you find progress, you usually find science. In track and field, the twain go hand in hand. In keeping with the increased interest in the sport, a group of scientifically-minded men have been experimenting with new ideas on techniques, equipment and rules. Out of these experiments have come a number of changes in the implements and in the recording of high class performances.

A few years ago the height of the high hurdles was reduced for high school performers from 42 inches to 39 inches. This change has proven very popular and is responsible for a tremendous increase in the number of schoolboy hurdlers. The 39-inch barrier is low enough for the average boy to clear and at the same time high enough to develop hurdling technique.

Prior to the rule change that lopped three inches off the standard high hurdle, the height was discouraging many boys from trying the event. After surgery was performed on the barrier, the event got a new lease on life. Good hurdling technique is still required but the height is no longer a bogey to would-be hurdlers. The normal development of the boy takes care of the three extra inches when he gets to college.

In the low hurdles the distance between the barriers was reduced from 20 yards to 18 and the race distance from 220 yards to 200. While this change has not been received as enthusiastically as the other, a majority of coaches are still in favor of it. At the moment, several extensive experiments are being conducted to ascertain whether or not it will be safe to return the extra two yards between hurdles.

Many men maintain that the distance of 18 yards between hurdles is too short and that if any modifi-

cation of the old distance is necessary the best way to do it is to llop off two hurdles, and keep the distance between barriers 20 yards. It is believed in many quarters that high school low hurdlers tire at the finish of the race and that the 20-yard distance between hurdles will be satisfactory if the distance of the whole race is shortened.

A few years ago there was some agitation to shorten many of the race distances and to eliminate the longer distances altogether. Improved training facilities apparently have removed most of the objection to distance running for high school boys. The solution seems to lie in better coaching and handling of the boys rather than in changing the distances they run. It has been proved beyond reasonable doubt that those high school boys who have the proper background and training for distance running can do it without any detrimental effects.

Discus trimmed

In the field events, the most significant change has been wrought in the discus. Discus throwing was rapidly losing its popularity as a high school event until several drastic alterations were made in the implement. The large, heavy discus designed for the college and athletic club thrower could not be handled by the average high school boy with the same degree of efficiency and accuracy.

A scientific experiment by Tuttle and Bresnahan* at the graduate school of the State University of Iowa, succeeded in establishing a relationship between the size and strength of the hand of the average schoolboy and that of his college brother.

The result was the adoption of the new high school discus, which is smaller and lighter by several ounces than the college discus. It is much safer, can be better controlled and offers a means of training boys for the heavier implement. Boys who cannot handle the larger discus while in high school but who may be able to do so upon maturing, can thus train for their specialty without suffering discomfort.

*Dr. W. W. Tuttle and George T. Bresnahan, "Designing the New High School Discus," *Scholastic Coach*, April, 1933.

The best records with the new weapon compare favorably with those made by college stars with the heavier implement. Some coaches, however, are not yet sold on it and think the change was too radical. Their argument is not supported by scientific fact. According to reliable tests and measurements, the new discus is just right for the schoolboy thrower.

One of the features of the new track and field program that has come to mean a great deal to track coaches and enthusiasts throughout the country is the national high school Honor Roll, which lists the season's top-ranking performances in all events. The 1939 roll of honor may be found in this year's N.C.A.A. track and field guide. At present we are starting the compilation for the current season, the tenth in the series since we began collecting nation-wide data back in 1931.

Most of the early records were made in the various state high school meets, and these reports still furnish the basis for the lists. Gradually, however, sports writers, college, university and high school coaches, relay directors, conference commissioners and secretaries, and many other interested parties have been sending newspaper clippings and other evidence of outstanding performances to us for consideration.

Check-up system

The material for the Honor Roll is sifted carefully. Through experience, we have been able to establish reliable correspondents in all sections of the country so that records may be checked before they are accepted. In Boston, New York, Los Angeles and other key cities, men have become interested in the Roll and take as much interest in its reliability as we do. They protect us from spurious claims and are painstaking in their search for authentic performances.

Of course the Honor Roll does not guarantee the records and only those that meet the official standards have a chance to break into the national record list. Occasionally some high class performance will not come to our attention, and once in a while an undeserved mark will slip by us.

As the high school representative on the National Track and Field Rules Committee, the writer will appreciate the cooperation of all interested parties in improving the high school program. All comments, suggestions and constructive criticism will be gratefully accepted.

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CARE OF TENNIS EQUIPMENT

By Henry H. Graham

ANY article of sports equipment lasts longer and gives better service when it is properly handled and cared for. As a rule, the expense of a sport is directly related to the attention that is lavished on the equipment.

In tennis, for example, the initial outlay for equipment is attractively low. But once the season gets underway, the coach may find it difficult to keep within the confines of his budget. More often than not, the fault is his own. With proper care, tennis equipment has a very low mortality rate. Without it, the rate shoots skyward. Hence, the matter of preservation should be more than an incidental concern of the coach.

There are many precautions the coach can take to insure long life for his equipment. Rackets, for instance, should always be kept in a case when they are not being used. Moisture is death to the strings. Just a few drops of water are all it takes to tighten the strings. This is apt to warp the frame and ruin the racket.

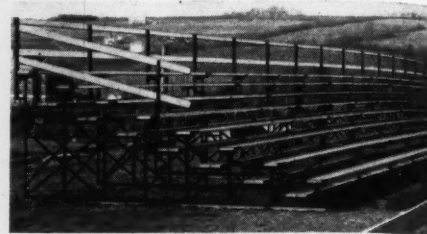
If you have a press, keep the racket in it. A press helps prevent warping and keeps the bat in fine condition. In particularly wet weather, the racket should be wrapped in newspapers, which have the faculty of absorbing moisture from the air. In any light, never place the bat in a locker with damp, sweaty flannels or other moist clothing.

Many players make the mistake, from time to time, of drumming on the racket strings as on a banjo. This inadvertent strumming has a detrimental effect on the strings, fraying them and wearing them out prematurely. A thin coating of a gut preservative, applied with a brush, helps preserve the life of the strings. The preservative should not be applied too frequently, however, or the strings will become thick and dead.

If you break a string, it is not necessary to have the entire racket restrung. An expert repair man can insert several individual strings without impairing the efficiency of the racket. Cross-strings, being shorter than the vertical type, are naturally much easier to replace. If many of the strings are frayed or otherwise in bad shape, the economical course is to have the entire racket restrung.

As far as nets are concerned, moisture is again the dreaded foe

LET'S TALK FACTS



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that must be combatted. Only the more expensive nets are tarred and thus rendered waterproof. Hence, it is a good idea, after you are through playing for the day, to roll up the net and place it indoors.

While the "gentle rain from heaven is twice blest," it never does a net any good. Even the water-proofed type will hold up longer if it is nursed along. Rain causes the net to shrink and, in time, become worthless.

If the coach wants to gamble with the elements, or if expense means nothing to him, he may leave the net outside after a match. But, upon conclusion of play, he should always lower it to relieve the tension. The few seconds that it takes to lower the net, and then raise it on the next playing date, are seconds well spent. It may mean a year or two of extra life for your net.

Steel nets

In schools that go in heavy for tennis, and where the courts are constantly in use, the nets naturally take unusual abuse and may start wearing away sooner than the coach bargained for. In this situation, the economical answer to the solution is steel nets. They have many advantages. The wires are light, yet strong, and resist destructive climatic conditions. Maintenance and replacement costs are reduced to a minimum because they will remain in place indefinitely without deteriorating.

Balls are an expensive item and also merit special attention. Used balls may be restored to something approaching normal liveliness by placing them in an oven for a few seconds. They should be withdrawn at the faintest sign of "roasting."

It pays to play with good balls. A well-used ball does not have the weight, fuzz and reaction of a new ball. It is difficult to control and will not take the various spins properly. It also has a tendency to float.

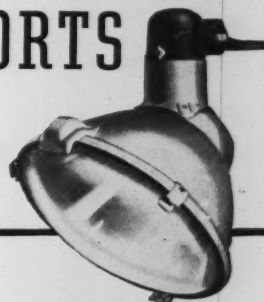
The care and upkeep of the court itself depends upon the type of surface it has. Dirt or clay courts require daily brushing and rolling. An extra supply of surface materials should be kept on hand for immediate repairs to scuffed or worn places.

To insure a firm surface, these types of courts should be treated with calcium chloride two or three times a year. The court should first be thoroughly watered and then about 175 pounds of the hardening agent applied.

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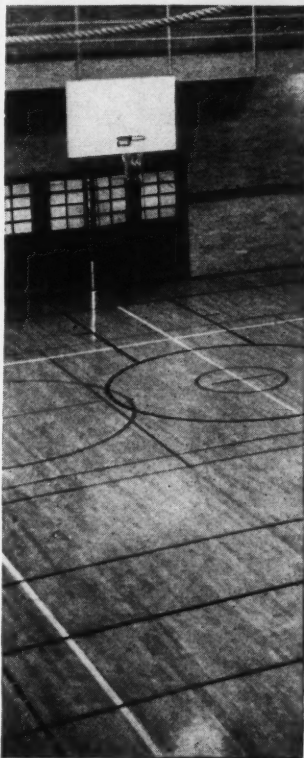


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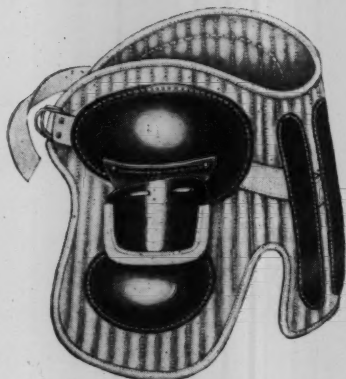
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GIRLS' AFTER-HOUR SPORTS

By Frank Thornton

Frank Thornton's report on Springfield, Mass., high schools' novel after-school sports program follows an interview with Ruth Evans, who directs the program in her capacity as assistant physical education supervisor. Her staff of instructors include: Bessie Fisher, Alleen Hills and Jean Jandreau at the High School of Commerce; Miriam Whittimore at Technical High; and Gertrude Dayton and Rosamund Wright at Classical High.

PHYSICAL education has a special contribution to make in the building and maintaining of organic power, which is the basis of health. It has a real place in the establishment of skills, which not only lay the basis for one's vocation, but for many leisure-time pursuits. Physical education activities properly organized develop keen thinking and the ability to make quick decisions.

According to Nash, physical education also offers an opportunity to produce some of the fine by-products which are really the essence of education—the ability to act in a sportsmanlike manner, to be a member of a team, to be courteous to opponents, and to be willing to sacrifice when necessary.

Sports for modern girls must include a wide variety so that every girl can find at least a few for which she may develop a lasting enthusiasm. This is essential if games are to be carried over into adult life.

At Springfield, Mass., where limitations in the way of time and space make it almost impossible to offer the girls a complete physical

education program, the city's three high schools have been getting extremely good results with an afternoon supplement to the regular program.

Although this program is organized and directed by regular physical education instructors, the plan works entirely on a voluntary basis. It has become so popular that more than 600 girls are taking part in it this year.

The idea of the program, briefly, is to offer planned after-school courses in everything from bowling to horseback riding as supplements to the less interesting requirements of the regular curriculum. These sports "extras" round out the program nicely and provide the girls with an opportunity to learn sports they will be able to enjoy in later years.

In the regular curriculum, there are three phases of a girl's course: (1) Instruction in the skills of several popular sports such as tennis, badminton, basketball and volleyball; (2) rhythmic limbering-up drills which incorporate the Bode system of alternate contraction and relaxation and lead up to modern and tap dancing; and (3) self-testing activities such as tumbling and apparatus work.

Among the varied activities which have been included in the after-school classes are riding, field hockey, soccer, bowling, badminton, ping-pong, skating, skiing, the mod-

ern dance, tennis, golf, and swimming.

With the single exception of riding, instruction in all sports is available at little or no expense. Because of its prohibitive cost, riding is a program item only at Classical High School where a riding club has attracted some 65 members.

The Classical riding club was started four years ago with eight members and has quickly become one of the school's most popular organizations. Besides weekly instruction classes and long rides through the city parks, the club holds regular teas throughout the year.

As a climax to the spring season, several Sunday afternoon gymkhanas, or "field days on horseback," are held to give the girls' parents a chance to see how well their daughters are doing. These affairs are managed from beginning to end by the girls themselves.

Other fall sports on the after-school program are field hockey and soccer. Both of these activities are conducted in the municipal parks, but they are not as popular as riding.

Bowling tops

Bowling is by far the most popular winter diversion. More than 125 girls from Classical High alone participated in this sport last winter. Local bowling alleys offer reduced rates to girls, and further interest is aroused by the organization of competitive teams. The captains of these teams arrange the matches.

Modern dancing is another popular activity in the winter. Exhibitions are usually presented at late-winter assemblies as a climax to the season. As might be expected, the girls take a keen interest in the dance and no trouble whatever is experienced in the organization of clubs.

In the spring, tennis ranks as the favorite sport. Last year more than 300 girls participated, receiving individual instruction at the various high school gymnasiums and competing for prizes in intramural tournaments in the city's various public parks.

A new feature of the program this spring will be golf, a sport for which there were many requests. Instruction will be provided two afternoons a week, beginning indoors in May. In good weather, members of the class will extend their activities to the local driving ranges and then to the two municipal courses.

Swimming has only been moderately successful because most of the

(Concluded on page 55)



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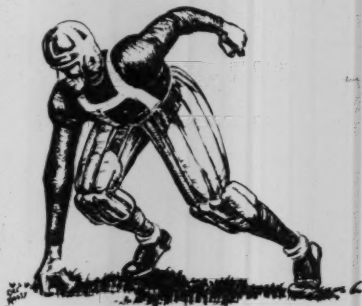
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Our squad is broken up into three teams. If thirteen players are present at practice, the teams consist of four, four and three players, plus the catcher and pitcher who work a full inning for all three teams. If fifteen players are on hand, the teams are broken up into units of four, four and five, again plus the pitcher and catcher.

The team at bat gets the customary three outs while the other two teams are in the field, in, or as near as possible, the positions they would play in a real game. Occasionally one or two extra players will be on the field, but if they spread out over the outfield, they should not get in the way.

The pitcher and catcher remain in their respective positions when a new team goes to bat, and stay there for one complete inning; that is, until all three teams have had their turn at bat. It is not advisable to work the pitcher for more than one complete inning as he gets no rest during this time.

Under this setup, the coach has an excellent opportunity to exercise his pitchers. There is no reason why a thrower can't continue with his chores after an inning of rest at bat or in the outfield.

This idea is advanced not as a substitute for batting practice, but as a refinement of the practice session. It tests the squad under actual

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game situations, and gives the coach a chance to criticize both the offense and the defense.

The pitcher will be bearing down and thus thoroughly testing the batters. Base runners provide the pitcher, catcher and infielders with a real game situation in which they must think and coordinate their efforts. And to keep the players doubly interested in the proceedings, a score is kept of all three teams.

This three-team practice system is also useful for small physical education classes in baseball or softball.

At Duke University, Coach Jack Coombs does not even change nine players from the offense to the defense, or vice versa, after three men are out. Three full innings are completed before a change is made.

As soon as three men have been retired by the defensive team, a new inning is started. If the offensive team has runners on the bases when the third man has been retired, they go to their bench and a new inning begins with none out and no one on for the team at bat.

This scheme allows a pitcher to work continuously for three full innings.

Sports Program

(Continued from page 53)

girls have already learned to swim and appear to be uninterested in competitive programs. Those who can't swim—the girls in whom the school department is naturally most interested—usually cannot be persuaded to join the club, it is distressing to report.

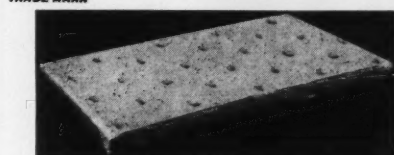
The instructors have little trouble organizing and conducting the many groups. The only work involved is the devisal of a schedule that is agreeable to the greatest number and that will bring them out.

Schedules are announced at the three schools and the girls are given free rein to choose any activities they desire. If a girl wanted to join the soccer or field hockey group, for example, she would consult the time and place schedule. If it met with her satisfaction, all she would have to do is enroll in one of the classes. Once the classes start taking shape, the girls themselves, in most cases, organize and conduct the clubs through individual leaders.

On May 18, the school department plans to hold a sports clinic for women physical education instructors throughout Massachusetts and the Connecticut Valley. A prominent speaker will be invited and demonstrations given on the teaching of 15 different girls' sports.



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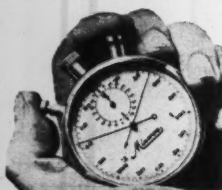
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Intramural Program

(Continued from page 10)

This medal, incidentally, is the only prize we offer for accomplishment. It is our policy to have the boys compete for the fun and enjoyment they get out of it rather than for any material reward.

As an outcome of this decathlon contest, we top the year off with a gala intramural track meet between the four classes. A faculty representative, abetted by two or three boys from each class, studies the decathlon records for the year and selects the outstanding boys in each event to represent their class.

This doesn't mean, however, that the meet is a closed affair. Even though a boy is not selected for any particular event, he is still given the privilege of entering any event he chooses. No boy is allowed to enter more than two events plus the relay; of the two events, one must be a field event. The meet is run off on two or three days, depending upon the number of entries.

The competitors are once again divided into six groups according to their strength index, with each of the four classes having representation in the different divisions. This gives the freshmen just as much chance of winning the meet as the seniors. The class that wins the meet has the honor of having its class numerals inscribed on a metal shield that is the permanent possession of the school.

6-Man Rules Changes

(Continued from page 35)

feet of the line of scrimmage instead of one foot. The difficulties ends have on spread formations and the difficulties in officiating prompted this change.

7. Substitutes must remain in the game for one or more plays and players who have left the game cannot return until one or more plays have elapsed. With these exceptions, there is no limit to the number of times a player may enter or leave the game.

8. Moulded balls and rubber constructed balls which meet other specifications are included as official balls.

9. Eleven-man shoes are permitted only if, at the time the game is scheduled, both teams agree to use them.

10. Numerous clarifications and rewordings were also made.

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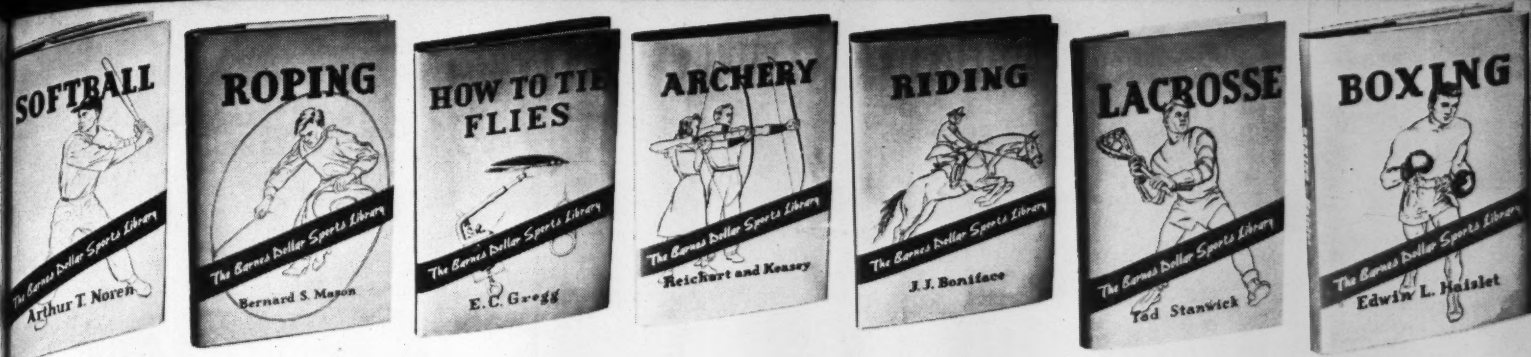
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